

```
In [2]: import numpy as np  
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]: zeros_arr = np.zeros((3,3), dtype =int)  
zeros_arr
```

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

```
In [5]: ones_arr*255
```

```
Out[5]: 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 [6]: zeros_arr
```

```
Out[6]: array([[0, 0, 0],  
               [0, 0, 0],  
               [0, 0, 0]])
```

```
In [7]: ones_arr
```

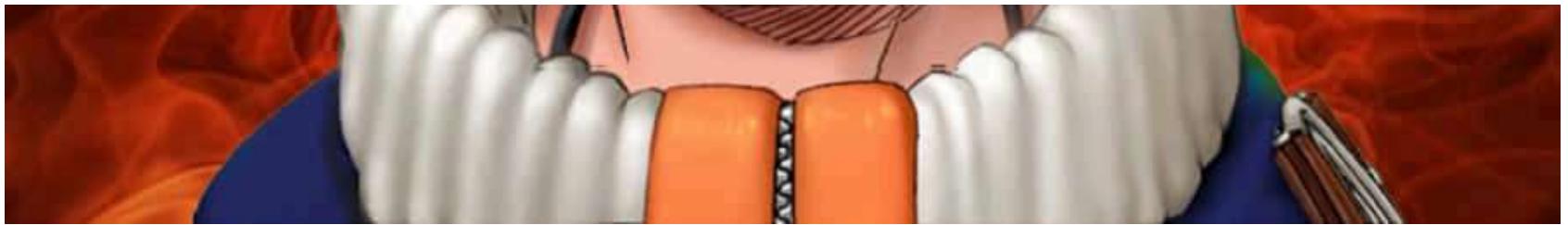
```
Out[7]: array([[1, 1, 1, 1, 1],  
   [1, 1, 1, 1, 1],  
   [1, 1, 1, 1, 1],  
   [1, 1, 1, 1, 1],  
   [1, 1, 1, 1, 1],  
   [1, 1, 1, 1, 1]])
```

```
In [8]: import matplotlib.pyplot as plt
```

```
In [9]: %matplotlib inline  
from PIL import Image # python imaging library  
naruto_img =Image.open(r'C:\Users\ADMIN\Desktop\cv workshop\naruto1.jpg')  
naruto_img
```

Out[9]:





```
In [10]: type(naruto_img) # which data type (PIL.JpegImagePlugin datatype)
```

```
Out[10]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [11]: naruto_arr = np.asarray(naruto_img)
naruto_arr
```

```
Out[11]: array([[[108,  30,  10],  
                 [106,  29,   9],  
                 [105,  28,   8],  
                 ...,  
                 [108,  44,  17],  
                 [107,  43,  16],  
                 [107,  43,  16]],  
  
                [[108,  30,  10],  
                 [107,  29,   9],  
                 [105,  28,   8],  
                 ...,  
                 [108,  44,  17],  
                 [107,  43,  16],  
                 [107,  43,  16]],  
  
                [[111,  30,  11],  
                 [108,  30,  10],  
                 [107,  29,   9],  
                 ...,  
                 [108,  44,  17],  
                 [107,  43,  16],  
                 [107,  43,  16]],  
  
                ...,  
  
                [[ 75,  18,   1],  
                 [ 77,  18,   2],  
                 [ 77,  18,   2],  
                 ...,  
                 [ 58,  11,   5],  
                 [ 58,  11,   5],  
                 [ 58,  11,   5]],  
  
                [[ 75,  18,   1],  
                 [ 76,  17,   1],  
                 [ 77,  18,   2],  
                 ...,  
                 [ 58,  11,   5],  
                 [ 58,  11,   5],  
                 [ 58,  11,   5]],
```

```
[[ 74,  17,  0],
 [ 75,  16,  0],
 [ 76,  17,  1],
 ...,
 [ 57,  10,  4],
 [ 57,  10,  4],
 [ 57,  10,  4]]], dtype=uint8)
```

```
In [12]: type(naruto_arr)
```

```
Out[12]: numpy.ndarray
```

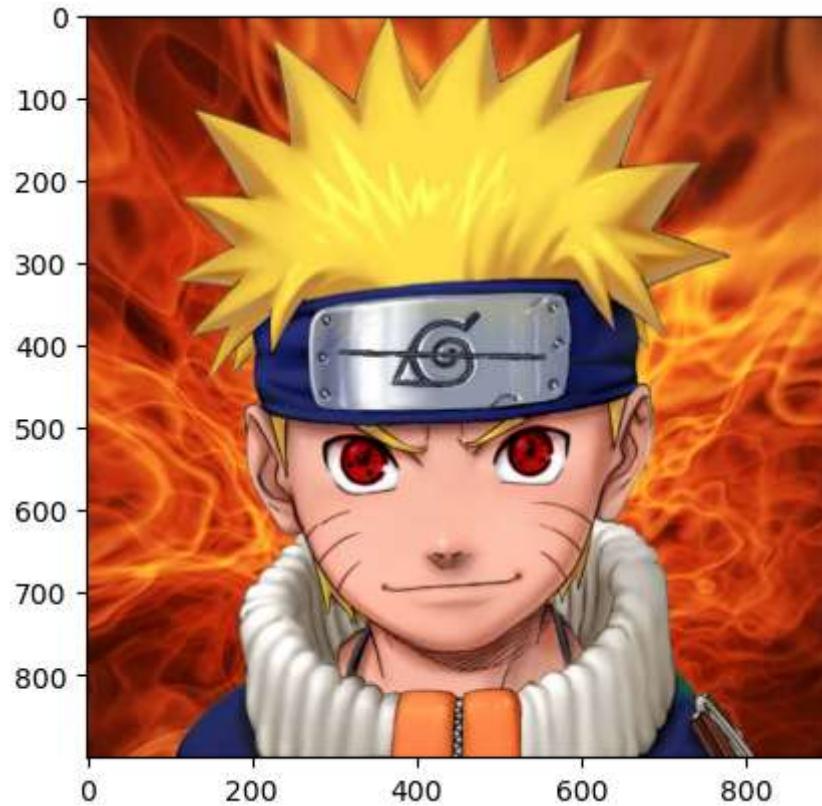
```
In [13]: naruto_arr.shape
```

```
Out[13]: (900, 900, 3)
```

```
In [14]: import matplotlib.pyplot as plt
```

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

```
Out[15]: <matplotlib.image.AxesImage at 0x29bbbe42750>
```



```
In [16]: naruto_red=naruto_arr.copy()  
naruto_red
```

```
Out[16]: array([[[108,  30,  10],  
                 [106,  29,   9],  
                 [105,  28,   8],  
                 ...,  
                 [108,  44,  17],  
                 [107,  43,  16],  
                 [107,  43,  16]],  
  
                [[108,  30,  10],  
                 [107,  29,   9],  
                 [105,  28,   8],  
                 ...,  
                 [108,  44,  17],  
                 [107,  43,  16],  
                 [107,  43,  16]],  
  
                [[111,  30,  11],  
                 [108,  30,  10],  
                 [107,  29,   9],  
                 ...,  
                 [108,  44,  17],  
                 [107,  43,  16],  
                 [107,  43,  16]],  
  
                ...,  
  
                [[ 75,  18,   1],  
                 [ 77,  18,   2],  
                 [ 77,  18,   2],  
                 ...,  
                 [ 58,  11,   5],  
                 [ 58,  11,   5],  
                 [ 58,  11,   5]],  
  
                [[ 75,  18,   1],  
                 [ 76,  17,   1],  
                 [ 77,  18,   2],  
                 ...,  
                 [ 58,  11,   5],  
                 [ 58,  11,   5],  
                 [ 58,  11,   5]],
```

```
[[ 74,  17,  0],
 [ 75,  16,  0],
 [ 76,  17,  1],
 ...,
 [ 57,  10,  4],
 [ 57,  10,  4],
 [ 57,  10,  4]]], dtype=uint8)
```

```
In [17]: naruto_arr == naruto_red
```

```
Out[17]: 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]],

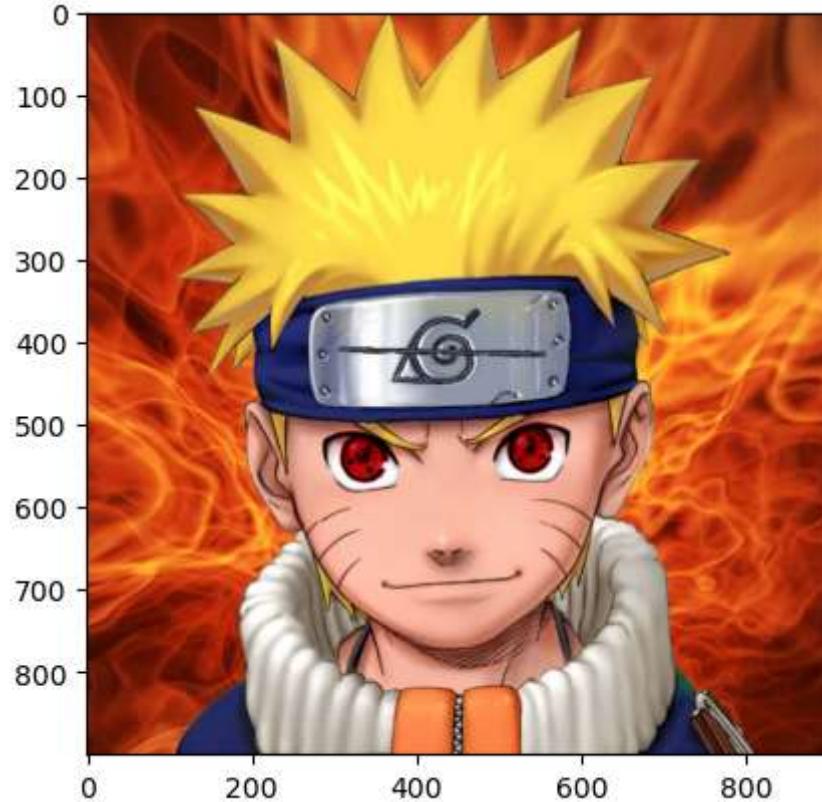
[[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

[[ 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 [18]: plt.imshow(naruto_red)
```

```
Out[18]: <matplotlib.image.AxesImage at 0x29bbd13a750>
```

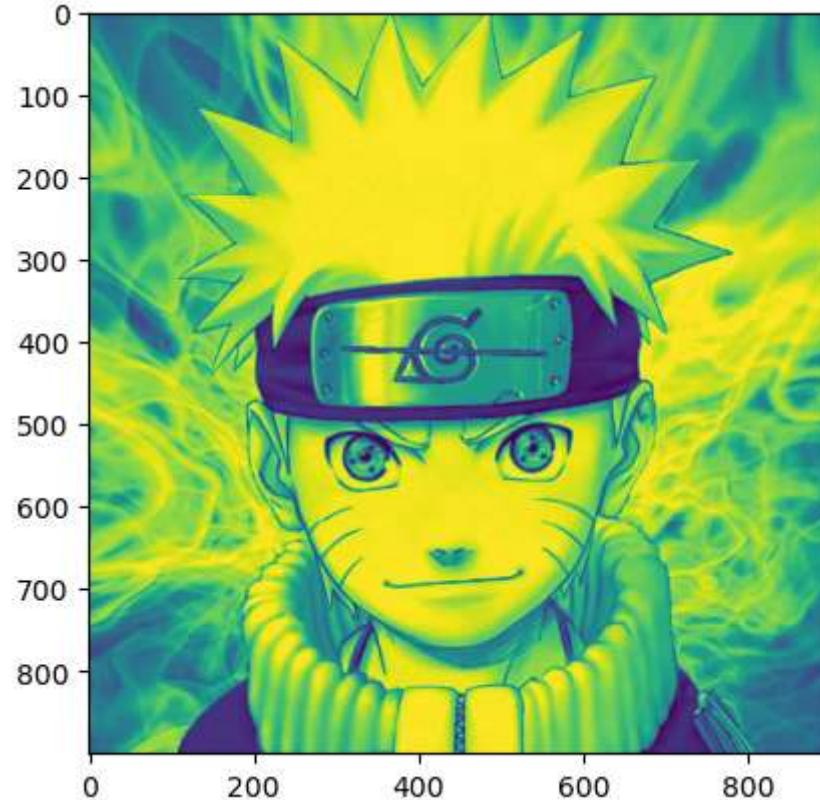


```
In [29]: naruto_red.shape
```

```
Out[29]: (900, 900, 3)
```

```
In [37]: plt.imshow(naruto_red[:, :, 0])
# R G B
```

```
Out[37]: <matplotlib.image.AxesImage at 0x20450782710>
```

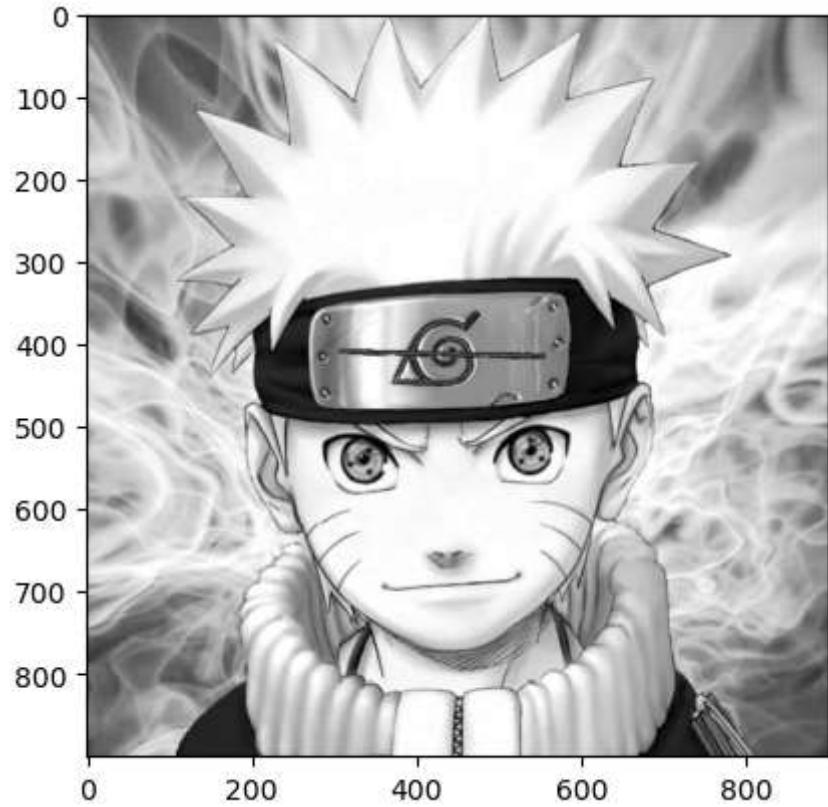


```
In [38]: naruto_red[:, :, 0]
```

```
Out[38]: array([[108, 106, 105, ..., 108, 107, 107],
   [108, 107, 105, ..., 108, 107, 107],
   [111, 108, 107, ..., 108, 107, 107],
   ...,
   [ 75,  77,  77, ...,  58,  58,  58],
   [ 75,  76,  77, ...,  58,  58,  58],
   [ 74,  75,  76, ...,  57,  57,  57]], dtype=uint8)
```

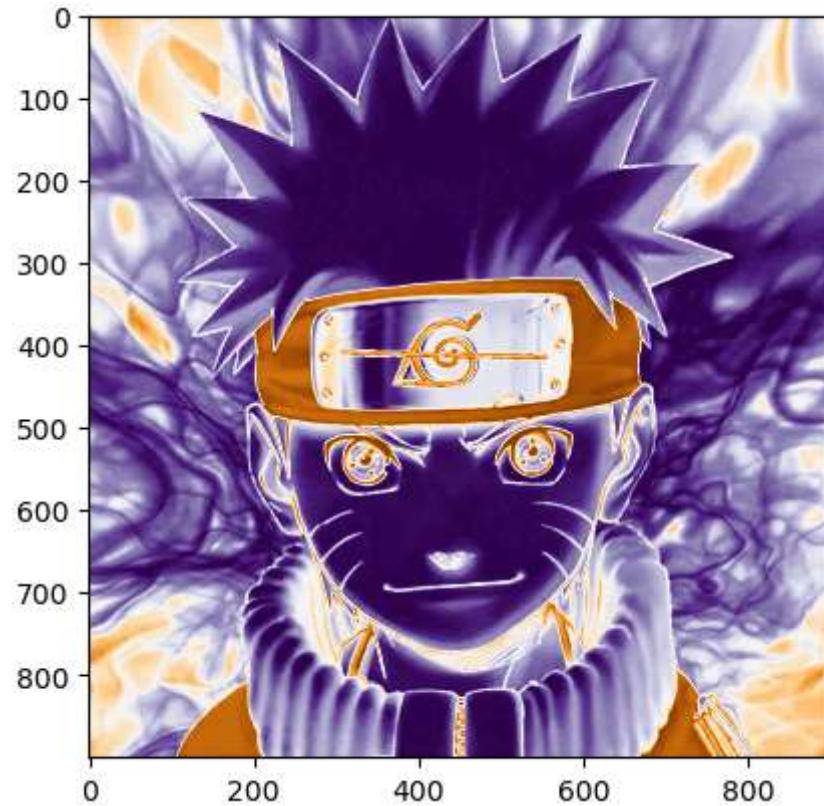
```
In [39]: plt.imshow(naruto_red[:, :, 0], cmap='gray')
```

```
Out[39]: <matplotlib.image.AxesImage at 0x2045044d9d0>
```



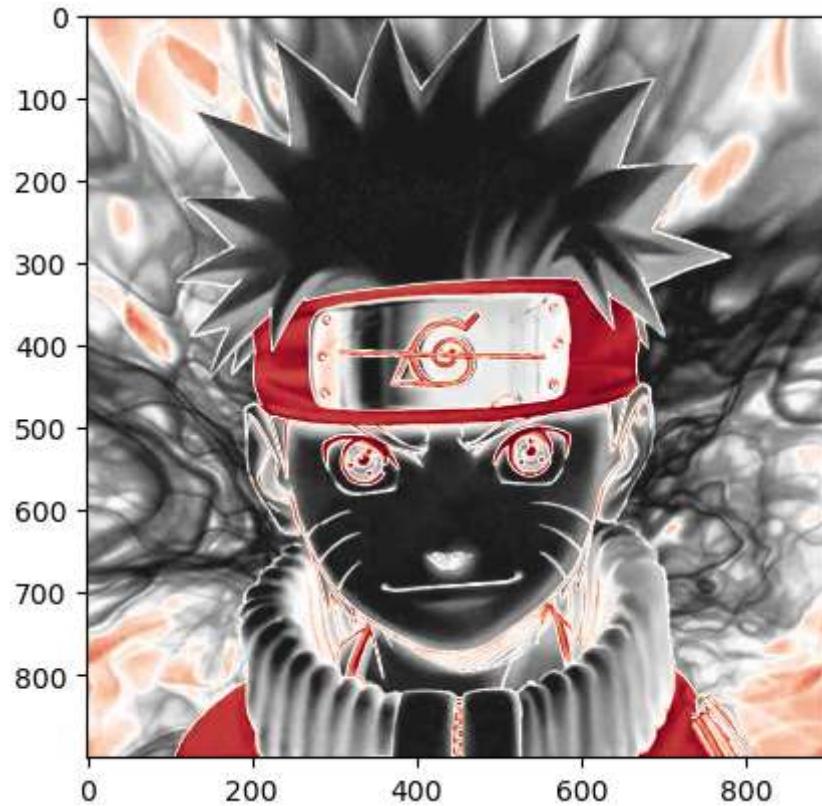
```
In [44]: plt.imshow(naruto_red[:, :, 0] , cmap='PuOr')
```

```
Out[44]: <matplotlib.image.AxesImage at 0x20454928ad0>
```



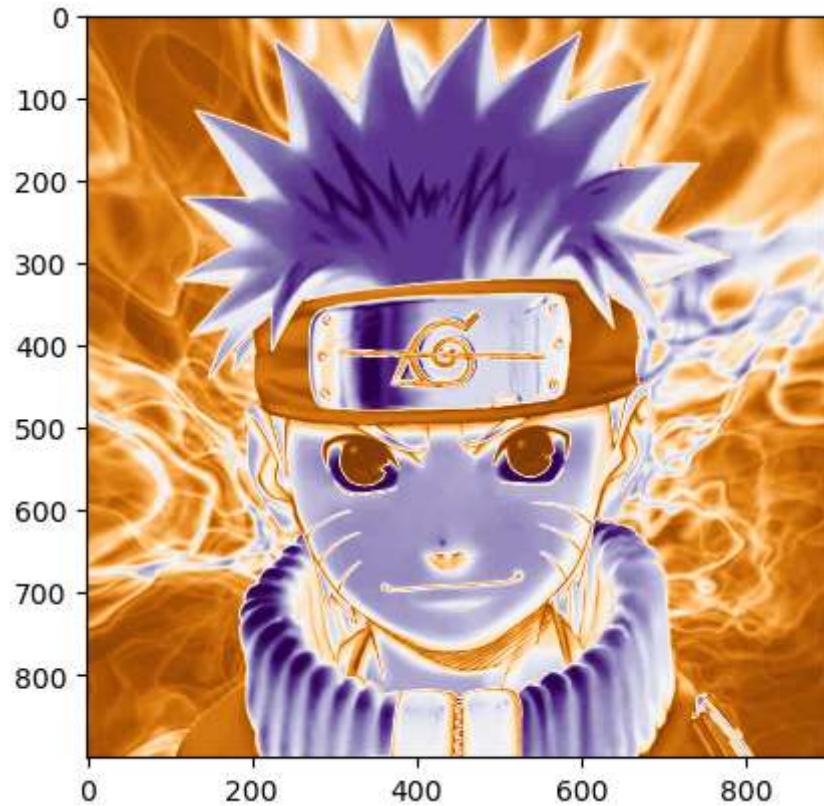
```
In [45]: plt.imshow(naruto_red[:, :, 0] , cmap='RdGy')
```

```
Out[45]: <matplotlib.image.AxesImage at 0x20454bdc150>
```



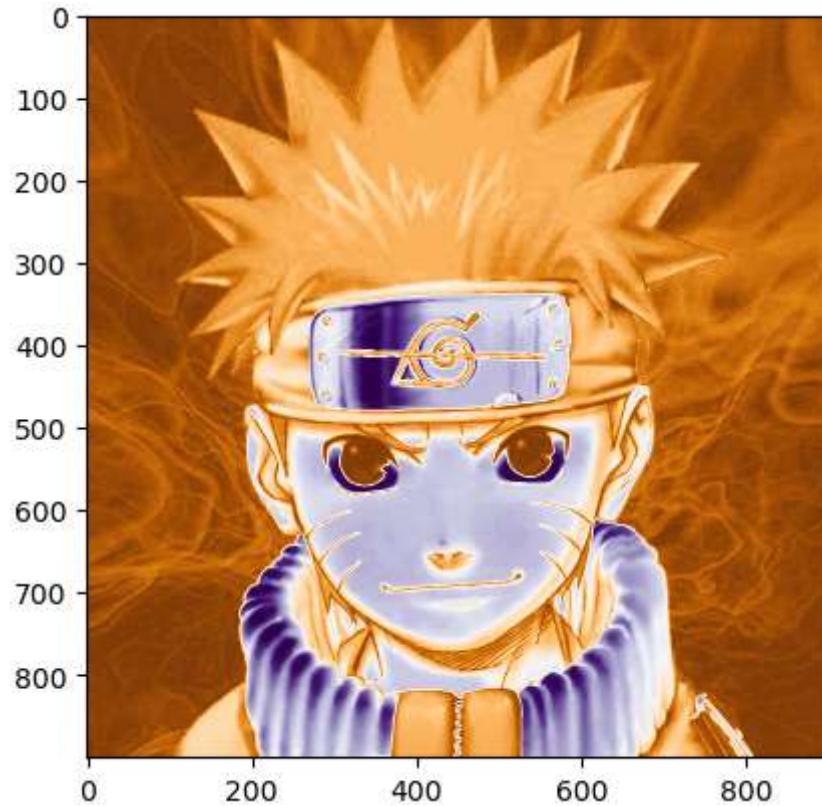
```
In [46]: plt.imshow(naruto_red[:, :, 1] , cmap='PuOr')
```

```
Out[46]: <matplotlib.image.AxesImage at 0x20454c04e50>
```



```
In [47]: plt.imshow(naruto_red[:, :, 2] , cmap='PuOr')
```

```
Out[47]: <matplotlib.image.AxesImage at 0x20455c7e350>
```



```
In [48]: naruto_red[:, :, 0]
```

```
Out[48]: array([[108, 106, 105, ..., 108, 107, 107],  
                 [108, 107, 105, ..., 108, 107, 107],  
                 [111, 108, 107, ..., 108, 107, 107],  
                 ...,  
                 [ 75,  77,  77, ...,  58,  58,  58],  
                 [ 75,  76,  77, ...,  58,  58,  58],  
                 [ 74,  75,  76, ...,  57,  57,  57]], dtype=uint8)
```

```
In [49]: naruto_red[:, :, 1]
```

```
Out[49]: array([[30, 29, 28, ..., 44, 43, 43],  
                 [30, 29, 28, ..., 44, 43, 43],  
                 [30, 30, 29, ..., 44, 43, 43],  
                 ...,  
                 [18, 18, 18, ..., 11, 11, 11],  
                 [18, 17, 18, ..., 11, 11, 11],  
                 [17, 16, 17, ..., 10, 10, 10]], dtype=uint8)
```

```
In [50]: naruto_red[:, :, 2]
```

```
Out[50]: array([[10, 9, 8, ..., 17, 16, 16],  
                 [10, 9, 8, ..., 17, 16, 16],  
                 [11, 10, 9, ..., 17, 16, 16],  
                 ...,  
                 [1, 2, 2, ..., 5, 5, 5],  
                 [1, 1, 2, ..., 5, 5, 5],  
                 [0, 0, 1, ..., 4, 4, 4]], dtype=uint8)
```

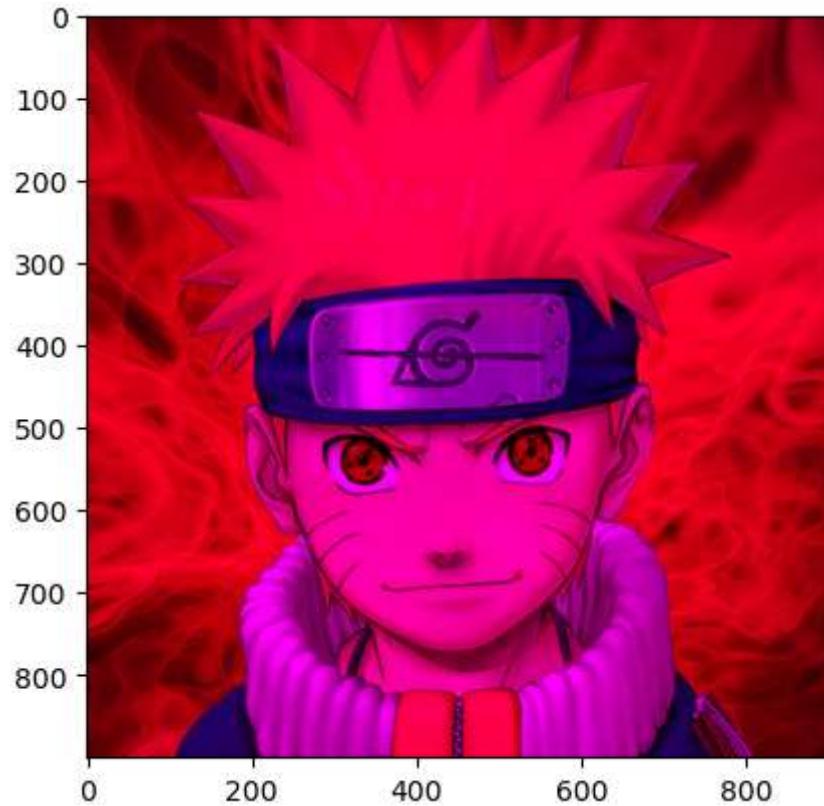
```
In [53]: naruto_red[:, :, 1]=0
```

```
In [54]: naruto_red[:, :, 1]
```

```
Out[54]: 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 [56]: plt.imshow(naruto_red)
```

```
Out[56]: <matplotlib.image.AxesImage at 0x20455cf7dd0>
```



```
In [57]: naruto_red[:, :, 2]
```

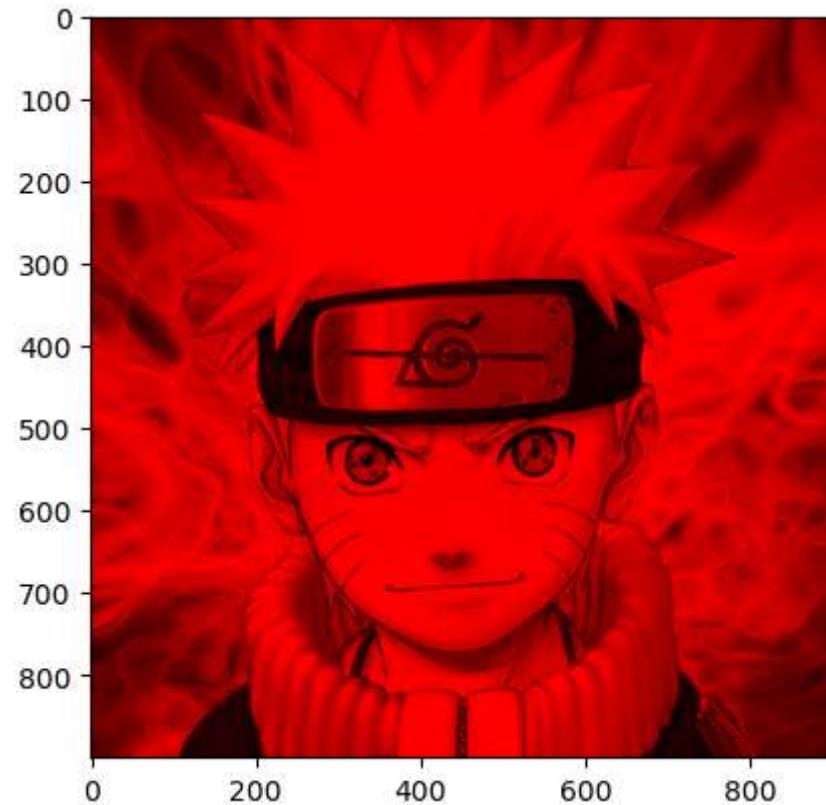
```
Out[57]: array([[10,  9,  8, ..., 17, 16, 16],
                 [10,  9,  8, ..., 17, 16, 16],
                 [11, 10,  9, ..., 17, 16, 16],
                 ...,
                 [ 1,  2,  2, ...,  5,  5,  5],
                 [ 1,  1,  2, ...,  5,  5,  5],
                 [ 0,  0,  1, ...,  4,  4,  4]], dtype=uint8)
```

```
In [58]: naruto_red[:, :, 2]=0
naruto_red[:, :, 2]
```

```
Out[58]: 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 [59]: plt.imshow(naruto_red)
```

```
Out[59]: <matplotlib.image.AxesImage at 0x20455ccda10>
```



```
In [60]: naruto_arr
```

```
Out[60]: array([[[108,    0,    0],
   [106,    0,    0],
   [105,    0,    0],
   ...,
   [108,    0,    0],
   [107,    0,    0],
   [107,    0,    0]],

   [[108,    0,    0],
   [107,    0,    0],
   [105,    0,    0],
   ...,
   [108,    0,    0],
   [107,    0,    0],
   [107,    0,    0]],

   [[111,    0,    0],
   [108,    0,    0],
   [107,    0,    0],
   ...,
   [108,    0,    0],
   [107,    0,    0],
   [107,    0,    0]],

   .....

   [[ 75,    0,    0],
   [ 77,    0,    0],
   [ 77,    0,    0],
   ...,
   [ 58,    0,    0],
   [ 58,    0,    0],
   [ 58,    0,    0]],

   [[ 75,    0,    0],
   [ 76,    0,    0],
   [ 77,    0,    0],
   ...,
   [ 58,    0,    0],
   [ 58,    0,    0],
   [ 58,    0,    0]],
```

```
[[ 74,    0,    0],
 [ 75,    0,    0],
 [ 76,    0,    0],
 ...,
 [ 57,    0,    0],
 [ 57,    0,    0],
 [ 57,    0,    0]]], dtype=uint8)
```

```
In [61]: naruto_red
```

```
Out[61]: array([[[108,    0,    0],
   [106,    0,    0],
   [105,    0,    0],
   ...,
   [108,    0,    0],
   [107,    0,    0],
   [107,    0,    0]],

   [[108,    0,    0],
   [107,    0,    0],
   [105,    0,    0],
   ...,
   [108,    0,    0],
   [107,    0,    0],
   [107,    0,    0]],

   [[111,    0,    0],
   [108,    0,    0],
   [107,    0,    0],
   ...,
   [108,    0,    0],
   [107,    0,    0],
   [107,    0,    0]],

   .....

   [[ 75,    0,    0],
   [ 77,    0,    0],
   [ 77,    0,    0],
   ...,
   [ 58,    0,    0],
   [ 58,    0,    0],
   [ 58,    0,    0]],

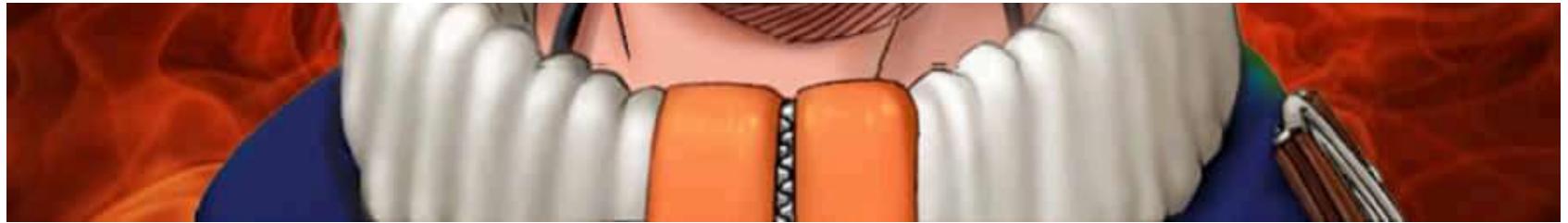
   [[ 75,    0,    0],
   [ 76,    0,    0],
   [ 77,    0,    0],
   ...,
   [ 58,    0,    0],
   [ 58,    0,    0],
   [ 58,    0,    0]],
```

```
[[ 74,    0,    0],
 [ 75,    0,    0],
 [ 76,    0,    0],
 ...,
 [ 57,    0,    0],
 [ 57,    0,    0],
 [ 57,    0,    0]]], dtype=uint8)
```

```
In [62]: naruto_img
```

Out[62]:





```
In [64]: arr1=np.asarray(naruto_img)
```

```
In [65]: arr1
```

```
Out[65]: array([[[108, 30, 10],  
                 [106, 29, 9],  
                 [105, 28, 8],  
                 ...,  
                 [108, 44, 17],  
                 [107, 43, 16],  
                 [107, 43, 16]],  
  
                [[108, 30, 10],  
                 [107, 29, 9],  
                 [105, 28, 8],  
                 ...,  
                 [108, 44, 17],  
                 [107, 43, 16],  
                 [107, 43, 16]],  
  
                [[111, 30, 11],  
                 [108, 30, 10],  
                 [107, 29, 9],  
                 ...,  
                 [108, 44, 17],  
                 [107, 43, 16],  
                 [107, 43, 16]],  
  
                ...,  
  
                [[ 75, 18, 1],  
                 [ 77, 18, 2],  
                 [ 77, 18, 2],  
                 ...,  
                 [ 58, 11, 5],  
                 [ 58, 11, 5],  
                 [ 58, 11, 5]],  
  
                [[ 75, 18, 1],  
                 [ 76, 17, 1],  
                 [ 77, 18, 2],  
                 ...,  
                 [ 58, 11, 5],  
                 [ 58, 11, 5],  
                 [ 58, 11, 5]],
```

```
[[ 74,  17,  0],
 [ 75,  16,  0],
 [ 76,  17,  1],
 ...,
 [ 57,  10,  4],
 [ 57,  10,  4],
 [ 57,  10,  4]]], dtype=uint8)
```

```
In [67]: type(arr1)
```

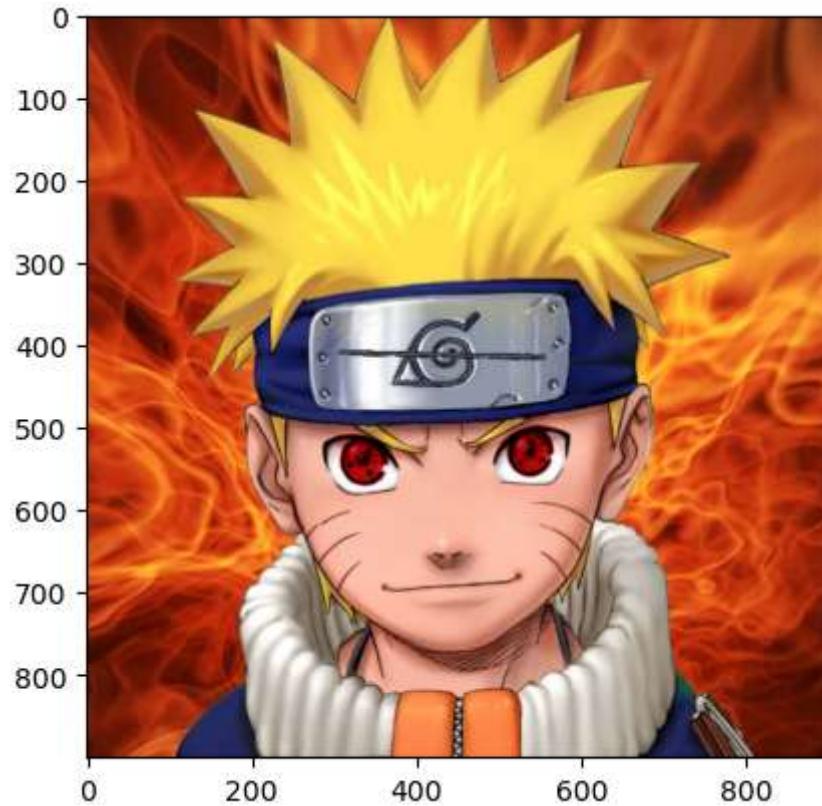
```
Out[67]: numpy.ndarray
```

```
In [68]: arr1.shape
```

```
Out[68]: (900, 900, 3)
```

```
In [69]: plt.imshow(arr1)
```

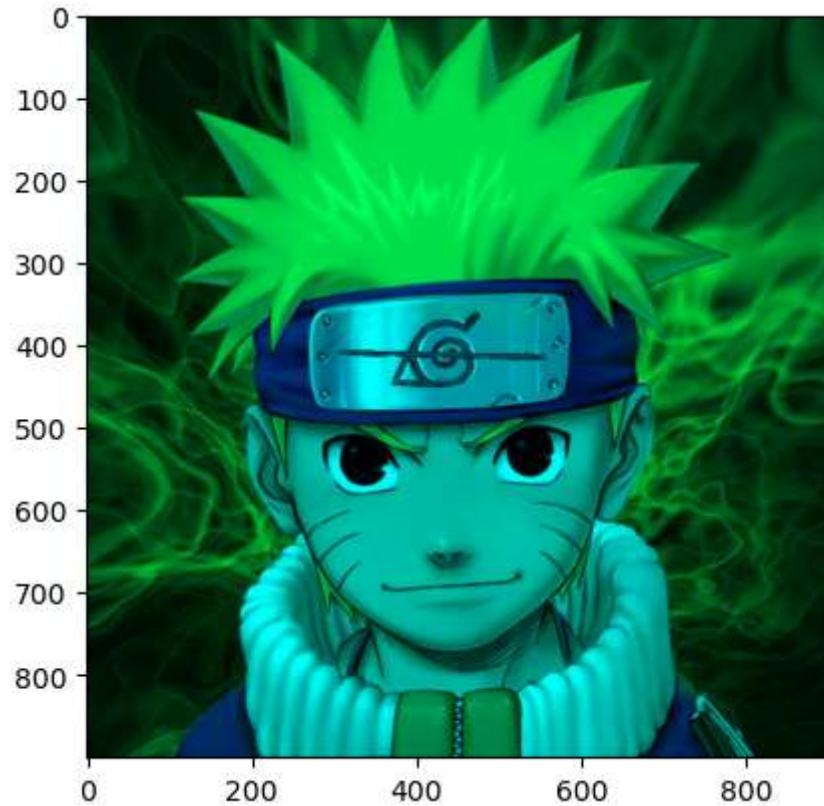
```
Out[69]: <matplotlib.image.AxesImage at 0x20456055590>
```



```
In [71]: naruto_img1=arr1.copy()
```

```
In [74]: naruto_img1[:, :, 0]=0  
plt.imshow(naruto_img1)
```

```
Out[74]: <matplotlib.image.AxesImage at 0x20456826b50>
```



```
In [77]: naruto_img1[:, :, 1] = 0
```

```
In [78]: plt.imshow(naruto_img1)
```

```
Out[78]: <matplotlib.image.AxesImage at 0x20457007110>
```

