

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

```
In [3]: ones_arr = np.ones((5,5))
```

```
In [4]: ones_arr
```

```
Out[4]: 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 [5]: ones_arr = np.ones((5,5),dtype=int)
```

```
In [6]: ones_arr
```

```
Out[6]: 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 [7]: zeros_arr = np.zeros((3,3),dtype = int)
```

```
In [8]: zeros_arr
```

```
Out[8]: array([[0, 0, 0],
 [0, 0, 0],
 [0, 0, 0]])
```

```
In [9]: ones_arr
```

```
Out[9]: 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 [10]: ones_arr * 255
```

```
Out[10]: 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 [11]: zeros_arr
```

```
Out[11]: array([[0, 0, 0],
 [0, 0, 0],
 [0, 0, 0]])
```

```
In [12]: ones_arr
```

```
Out[12]: 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 [13]: import matplotlib.pyplot as plt
```

```
In [14]: %matplotlib inline
```

```
In [16]: from PIL import Image # python imaging library
```

```
In [17]: paris_img = Image.open("C:\Users\sidra\Pictures\paris.jpg")
```

Input In [17]

```
paris_img = Image.open("C:\Users\sidra\Pictures\paris.jpg")  
^
```

SyntaxError: (unicode error) 'unicodeescape' codec can't decode bytes in position 2-3: truncated \UXXXXXXXXX escape

```
In [18]: paris_img = Image.open(r'C:\Users\sidra\Pictures\paris.jpg')
```

```
In [19]: paris_img
```

```
Out[19]:
```



```
In [20]: type(paris_img)
```

```
Out[20]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [21]: paris_arr = np.asarray(paris_img)
paris_arr
```

```
Out[21]: array([[[209, 231, 252],
   [209, 231, 252],
   [209, 231, 252],
   ...,
   [117, 175, 223],
   [117, 175, 223],
   [118, 176, 224]],

  [[[209, 231, 252],
   [209, 231, 252],
   [209, 231, 252],
   ...,
   [116, 174, 222],
   [116, 174, 222],
   [117, 175, 223]],

  [[[209, 231, 252],
   [209, 231, 252],
   [209, 231, 252],
   ...,
   [115, 173, 221],
   [115, 173, 221],
   [115, 173, 221]],

  ...,

  [[[123, 136, 171],
   [116, 129, 164],
   [116, 129, 164],
   ...,
   [132, 134, 149],
   [254, 254, 255],
   [252, 253, 255]],

  [[[124, 137, 172],
   [125, 138, 173],
   [124, 137, 172],
   ...,
   [132, 134, 149],
   [254, 254, 255],
   [249, 250, 252]],

  [[[124, 137, 172],
   [134, 147, 182],
   [131, 144, 179],
   ...,
   [135, 137, 152],
   [254, 254, 255],
   [249, 250, 252]]], dtype=uint8)
```

```
In [22]: type(paris_arr)
```

```
Out[22]: numpy.ndarray
```

```
In [23]: paris_arr.shape
```

```
Out[23]: (2160, 3840, 3)
```

```
In [24]: plt.imshow(paris_arr)
```

```
Out[24]: <matplotlib.image.AxesImage at 0x17dce363c10>
```



```
In [25]: paris_red = paris_arr.copy()
```

```
In [26]: paris_red
```

```
Out[26]: array([[[209, 231, 252],  
                  [209, 231, 252],  
                  [209, 231, 252],  
                  ...,  
                  [117, 175, 223],  
                  [117, 175, 223],  
                  [118, 176, 224]],  
  
                 [[209, 231, 252],  
                  [209, 231, 252],  
                  [209, 231, 252],  
                  ...,  
                  [116, 174, 222],  
                  [116, 174, 222],  
                  [117, 175, 223]],  
  
                 [[209, 231, 252],  
                  [209, 231, 252],  
                  [209, 231, 252],  
                  ...,  
                  [115, 173, 221],  
                  [115, 173, 221],  
                  [115, 173, 221]],  
  
                 ...,  
  
                 [[123, 136, 171],  
                  [116, 129, 164],  
                  [116, 129, 164],  
                  ...,  
                  [132, 134, 149],  
                  [254, 254, 255],  
                  [252, 253, 255]],  
  
                 [[124, 137, 172],  
                  [125, 138, 173],  
                  [124, 137, 172],  
                  ...,  
                  [132, 134, 149],  
                  [254, 254, 255],  
                  [249, 250, 252]],  
  
                 [[124, 137, 172],  
                  [134, 147, 182],  
                  [131, 144, 179],  
                  ...,  
                  [135, 137, 152],  
                  [254, 254, 255],  
                  [249, 250, 252]]], dtype=uint8)
```

```
In [28]: paris_arr == paris_red
```

```
Out[28]: 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 [29]: plt.imshow(paris_red)
```

```
Out[29]: <matplotlib.image.AxesImage at 0x17dce5ef970>
```

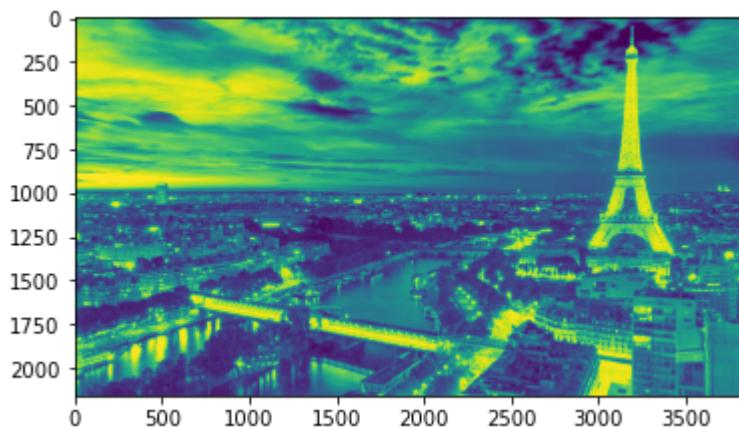


```
In [30]: paris_red.shape
```

```
Out[30]: (2160, 3840, 3)
```

```
In [32]: # R G B  
plt.imshow(paris_red[:, :, 0])
```

```
Out[32]: <matplotlib.image.AxesImage at 0x17dce702af0>
```



```
In [33]: paris_red[:, :, 0]
```

```
Out[33]: array([[209, 209, 209, ..., 117, 117, 118],  
                 [209, 209, 209, ..., 116, 116, 117],  
                 [209, 209, 209, ..., 115, 115, 115],  
                 ...,  
                 [123, 116, 116, ..., 132, 254, 252],  
                 [124, 125, 124, ..., 132, 254, 249],  
                 [124, 134, 131, ..., 135, 254, 249]], dtype=uint8)
```

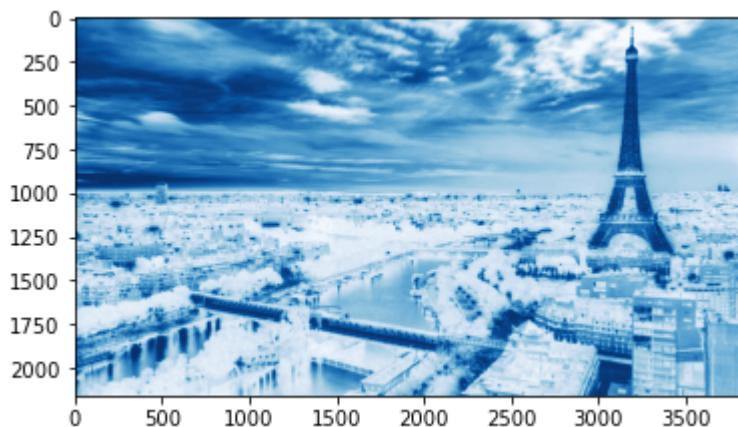
```
In [34]: plt.imshow(paris_red[:, :, 0], cmap='gray')
```

```
Out[34]: <matplotlib.image.AxesImage at 0x17dce84f9d0>
```



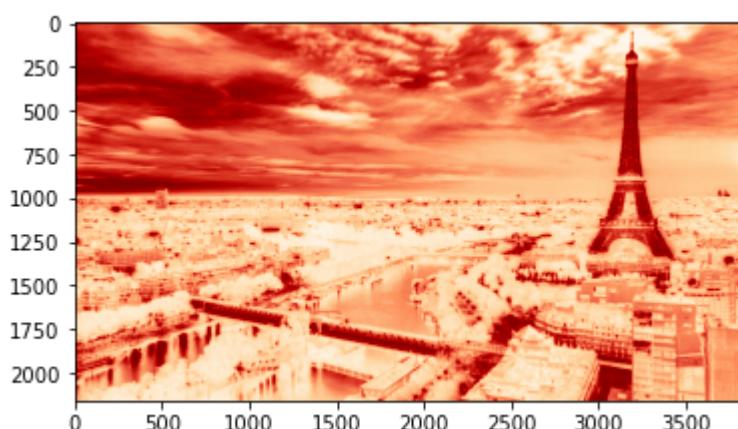
```
In [35]: plt.imshow(paris_red[:, :, 0], cmap='Blues')
```

```
Out[35]: <matplotlib.image.AxesImage at 0x17dce916e50>
```



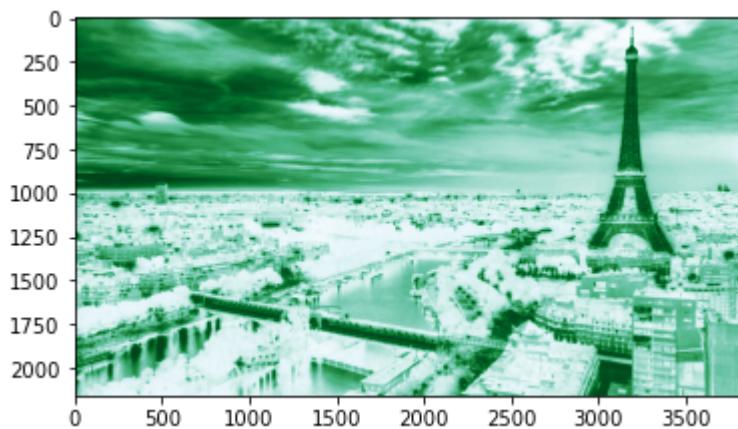
```
In [36]: plt.imshow(paris_red[:, :, 0], cmap='OrRd')
```

```
Out[36]: <matplotlib.image.AxesImage at 0x17dceae3eb0>
```



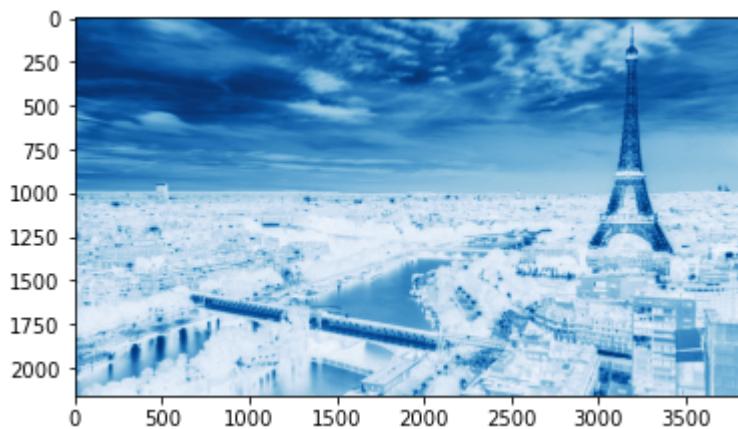
```
In [37]: plt.imshow(paris_red[:, :, 0], cmap='BuGn')
```

```
Out[37]: <matplotlib.image.AxesImage at 0x17dcebaacd0>
```



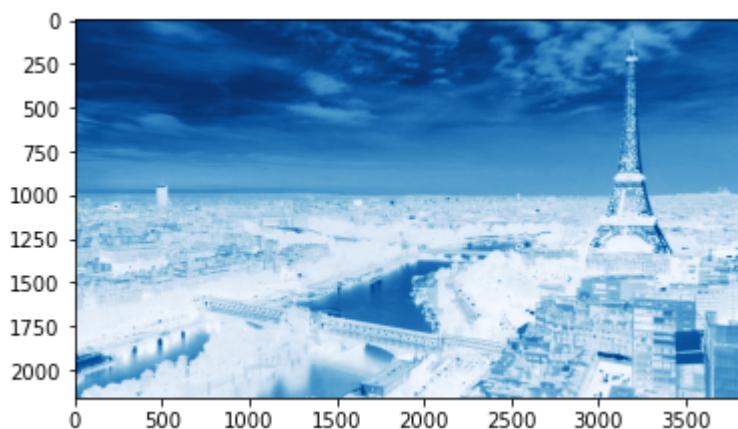
```
In [38]: plt.imshow(paris_red[:, :, 1], cmap='Blues')
```

```
Out[38]: <matplotlib.image.AxesImage at 0x17dce1cc880>
```



```
In [39]: plt.imshow(paris_red[:, :, 2], cmap='Blues')
```

```
Out[39]: <matplotlib.image.AxesImage at 0x17dcec9a910>
```



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

```
Out[40]: array([[231, 231, 231, ..., 175, 175, 176],  
                 [231, 231, 231, ..., 174, 174, 175],  
                 [231, 231, 231, ..., 173, 173, 173],  
                 ...,  
                 [136, 129, 129, ..., 134, 254, 253],  
                 [137, 138, 137, ..., 134, 254, 250],  
                 [137, 147, 144, ..., 137, 254, 250]], dtype=uint8)
```

```
In [41]: paris_red[:, :, 2]
```

```
Out[41]: array([[252, 252, 252, ..., 223, 223, 224],  
                 [252, 252, 252, ..., 222, 222, 223],  
                 [252, 252, 252, ..., 221, 221, 221],  
                 ...,  
                 [171, 164, 164, ..., 149, 255, 255],  
                 [172, 173, 172, ..., 149, 255, 252],  
                 [172, 182, 179, ..., 152, 255, 252]], dtype=uint8)
```

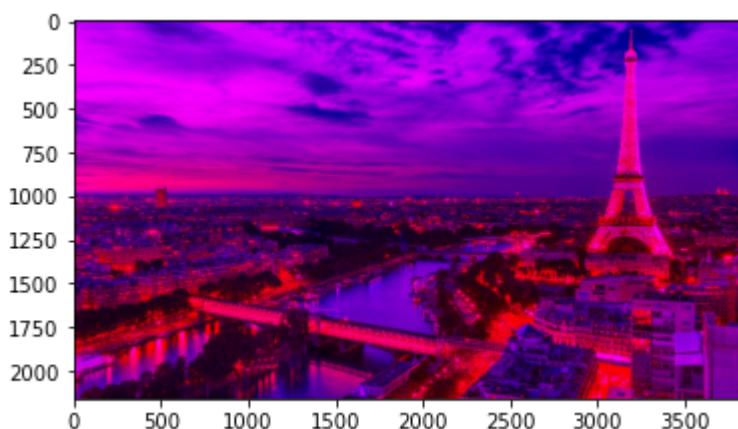
```
In [42]: paris_red[:, :, 1] = 0
```

```
In [43]: paris_red[:, :, 1]
```

```
Out[43]: 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 [44]: plt.imshow(paris_red)
```

```
Out[44]: <matplotlib.image.AxesImage at 0x17dcea38280>
```



```
In [45]: paris_red[:, :, 2]
```

```
Out[45]: array([[252, 252, 252, ..., 223, 223, 224],  
                 [252, 252, 252, ..., 222, 222, 223],  
                 [252, 252, 252, ..., 221, 221, 221],  
                 ...,  
                 [171, 164, 164, ..., 149, 255, 255],  
                 [172, 173, 172, ..., 149, 255, 252],  
                 [172, 182, 179, ..., 152, 255, 252]], dtype=uint8)
```

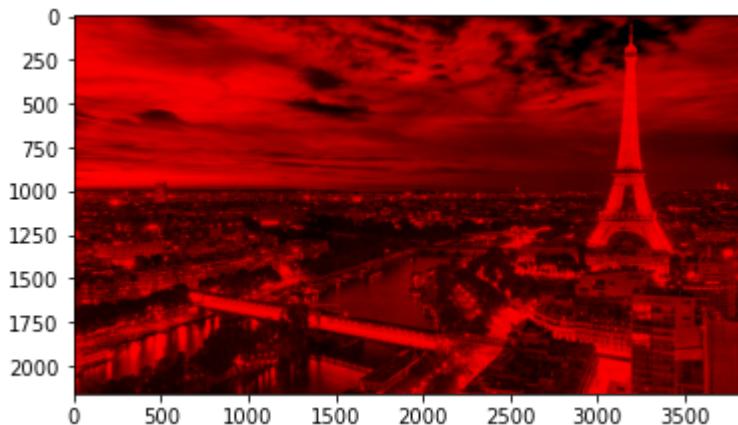
```
In [46]: paris_red[:, :, 2] = 0
```

```
In [47]: paris_red[:, :, 2]
```

```
Out[47]: 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 [48]: plt.imshow(paris_red)
```

```
Out[48]: <matplotlib.image.AxesImage at 0x17dcea7ffd0>
```



In [49]: paris_arr

```
Out[49]: array([[[209, 0, 0],  
                  [209, 0, 0],  
                  [209, 0, 0],  
                  ...,  
                  [117, 0, 0],  
                  [117, 0, 0],  
                  [118, 0, 0]],  
  
                 [[209, 0, 0],  
                  [209, 0, 0],  
                  [209, 0, 0],  
                  ...,  
                  [116, 0, 0],  
                  [116, 0, 0],  
                  [117, 0, 0]],  
  
                 [[209, 0, 0],  
                  [209, 0, 0],  
                  [209, 0, 0],  
                  ...,  
                  [115, 0, 0],  
                  [115, 0, 0],  
                  [115, 0, 0]],  
  
                 ...,  
  
                 [[123, 0, 0],  
                  [116, 0, 0],  
                  [116, 0, 0],  
                  ...,  
                  [132, 0, 0],  
                  [254, 0, 0],  
                  [252, 0, 0]],  
  
                 [[124, 0, 0],  
                  [125, 0, 0],  
                  [124, 0, 0],  
                  ...,  
                  [132, 0, 0],  
                  [254, 0, 0],  
                  [249, 0, 0]],  
  
                 [[124, 0, 0],  
                  [134, 0, 0],  
                  [131, 0, 0],  
                  ...,  
                  [135, 0, 0],  
                  [254, 0, 0],  
                  [249, 0, 0]]], dtype=uint8)
```

In [50]: paris_red

```
Out[50]: array([[[209, 0, 0],  
                  [209, 0, 0],  
                  [209, 0, 0],  
                  ...,  
                  [117, 0, 0],  
                  [117, 0, 0],  
                  [118, 0, 0]],  
  
                 [[209, 0, 0],  
                  [209, 0, 0],  
                  [209, 0, 0],  
                  ...,  
                  [116, 0, 0],  
                  [116, 0, 0],  
                  [117, 0, 0]],  
  
                 [[209, 0, 0],  
                  [209, 0, 0],  
                  [209, 0, 0],  
                  ...,  
                  [115, 0, 0],  
                  [115, 0, 0],  
                  [115, 0, 0]],  
  
                 ...,  
  
                 [[123, 0, 0],  
                  [116, 0, 0],  
                  [116, 0, 0],  
                  ...,  
                  [132, 0, 0],  
                  [254, 0, 0],  
                  [252, 0, 0]],  
  
                 [[124, 0, 0],  
                  [125, 0, 0],  
                  [124, 0, 0],  
                  ...,  
                  [132, 0, 0],  
                  [254, 0, 0],  
                  [249, 0, 0]],  
  
                 [[124, 0, 0],  
                  [134, 0, 0],  
                  [131, 0, 0],  
                  ...,  
                  [135, 0, 0],  
                  [254, 0, 0],  
                  [249, 0, 0]]], dtype=uint8)
```

```
In [51]: paris_img
```

```
Out[51]:
```



```
In [52]: arr1 = np.asarray(paris_img)
```

```
In [53]: type(arr1)
```

```
Out[53]: numpy.ndarray
```

```
In [54]: arr1.shape
```

```
Out[54]: (2160, 3840, 3)
```

```
In [55]: plt.imshow(arr1)
```

```
Out[55]: <matplotlib.image.AxesImage at 0x17dd42cee20>
```

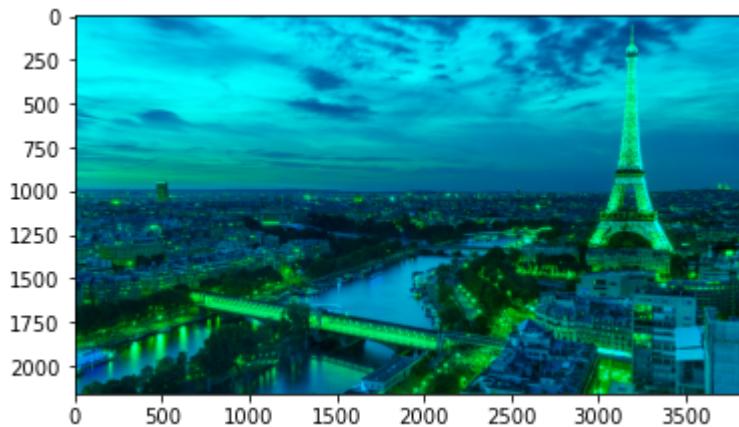


```
In [56]: paris_img1 = arr1.copy()
```

```
In [57]: paris_img1[:, :, 0] = 0
```

```
In [58]: plt.imshow(paris_img1)
```

```
Out[58]: <matplotlib.image.AxesImage at 0x17dd431adc0>
```



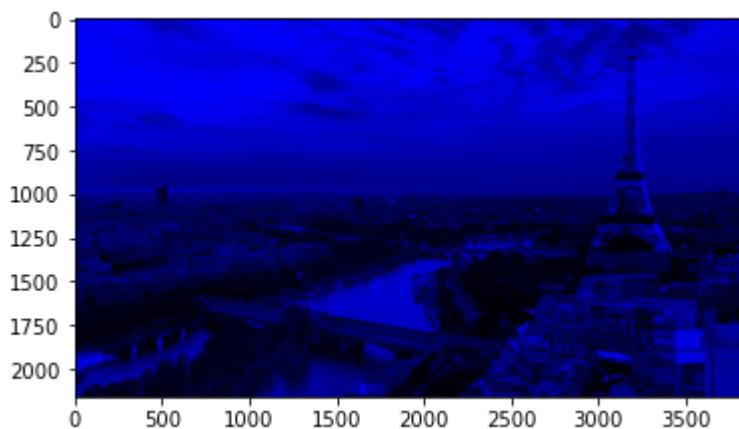
```
In [59]: paris_img1[:, :, 1]
```

```
Out[59]: array([[231, 231, 231, ..., 175, 175, 176],
   [231, 231, 231, ..., 174, 174, 175],
   [231, 231, 231, ..., 173, 173, 173],
   ...,
   [136, 129, 129, ..., 134, 254, 253],
   [137, 138, 137, ..., 134, 254, 250],
   [137, 147, 144, ..., 137, 254, 250]], dtype=uint8)
```

```
In [60]: paris_img1[:, :, 1] = 0
```

```
In [61]: plt.imshow(paris_img1)
```

```
Out[61]: <matplotlib.image.AxesImage at 0x17dd4366850>
```



```
In [ ]:
```