NP,PLT,PIL

Day 18 Aug 27th

In [3]:
```
import numpy as np
```

In [ ]:
```
# pil -- python image library
# every image is breakdown into 0 - 255 pixels
```

In [11]:
```
ones_arr = np.ones((3,3))
ones_arr
```

Out[11]:
```
array([[1., 1., 1.],
       [1., 1., 1.],
       [1., 1., 1.]])
```

In [19]:
```
ones_arr = np.ones((5,5), dtype = int)
ones_arr
```

Out[19]:
```
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 [21]:
```
ones_arr * 255
```

Out[21]:
```
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 [5]:
```
import matplotlib.pyplot as plt
```

In [7]:
```
%matplotlib inline
```

In [23]:
```
from PIL import Image #pil -- python image library
```

In [39]:
```
lionking_img = Image.open(r'C:\Users\gadel\Downloads\lionking_img.jpeg')
lionking_img
```

Out[39]:

In [41]:
```
type(lionking_img)
```

Out[41]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [43]:
```
lionking_arr = np.asarray(lionking_img)
lionking_arr
```

Out[43]:
```
array([[[161, 146, 143],
        [161, 146, 143],
        [161, 146, 143],
        ...,
        [ 93, 102, 119],
        [ 93, 102, 119],
        [ 92, 101, 118]],

       [[162, 147, 144],
        [162, 147, 144],
        [162, 147, 144],
        ...,
        [ 93, 102, 119],
        [ 93, 102, 119],
        [ 93, 102, 119]],

       [[162, 147, 144],
        [162, 147, 144],
        [162, 147, 144],
        ...,
        [ 94, 103, 120],
        [ 93, 102, 119],
        [ 93, 102, 119]],

       ...,

       [[ 37,  28,  21],
        [ 38,  29,  22],
        [ 38,  29,  22],
        ...,
        [ 70,  47,  33],
        [ 65,  42,  26],
        [ 53,  30,  14]],

       [[ 37,  28,  21],
        [ 38,  29,  22],
        [ 38,  29,  22],
        ...,
        [ 64,  41,  25],
        [ 75,  49,  34],
        [ 78,  52,  35]],

       [[ 37,  28,  21],
        [ 38,  29,  22],
        [ 38,  29,  22],
        ...,
        [ 64,  38,  21],
        [ 69,  43,  26],
        [ 73,  47,  30]]], dtype=uint8)
```

In [45]:
```
type(lionking_arr)
```

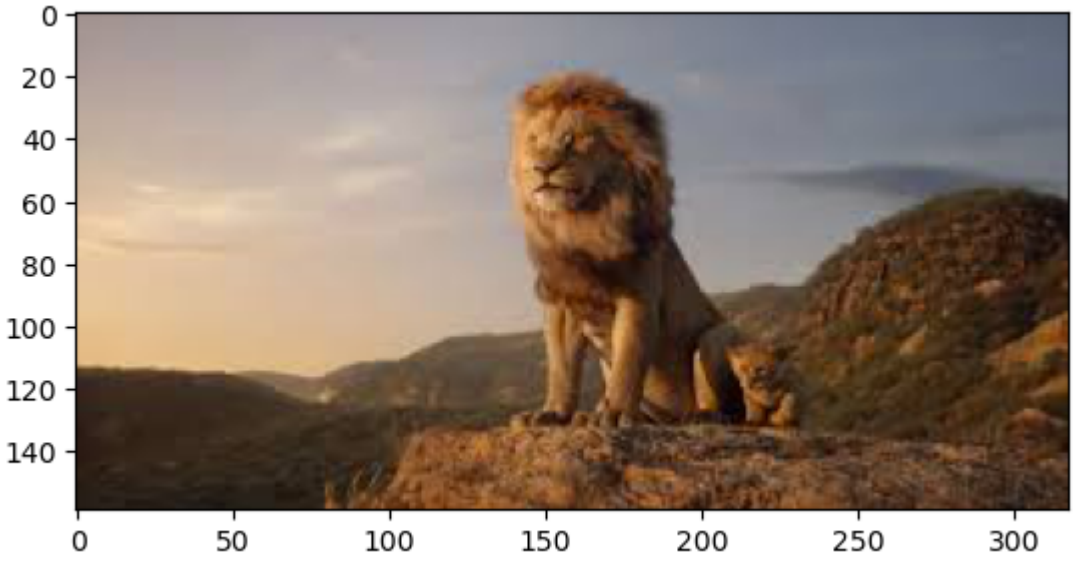
Out[45]: numpy.ndarray

In [47]:
```
lionking_arr.shape
```

Out[47]: (159, 318, 3)

In [49]:
```
plt.imshow(lionking_arr)
# we can see the width of the image and height of the image
```

Out[49]: <matplotlib.image.AxesImage at 0x2174f343f20>



In [53]:
```
lionking_red = lionking_arr.copy()
lionking_red
```

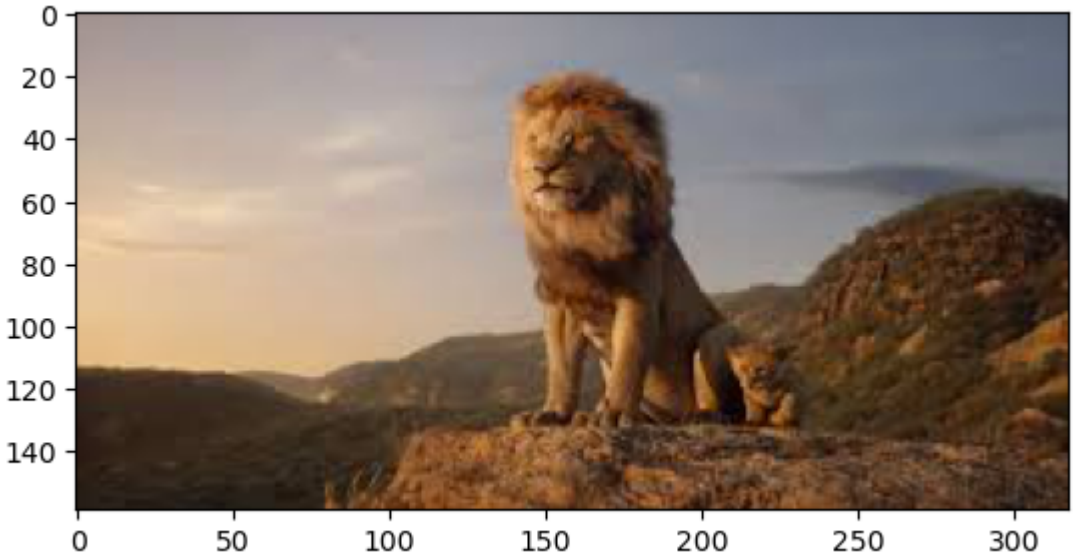
Out[53]:
```
array([[[161, 146, 143],
        [161, 146, 143],
        [161, 146, 143],
        ...,
        [ 93, 102, 119],
        [ 93, 102, 119],
        [ 92, 101, 118]],

       [[162, 147, 144],
        [162, 147, 144],
        [162, 147, 144],
        ...,
        [ 93, 102, 119],
        [ 93, 102, 119],
        [ 93, 102, 119]],

       [[162, 147, 144],
        [162, 147, 144],
        [162, 147, 144],
        ...,
        [ 94, 103, 120],
        [ 93, 102, 119],
        [ 93, 102, 119]],

       ...,

       [[ 37,  28,  21],
        [ 38,  29,  22],
        [ 38,  29,  22],
        ...,
        [ 70,  47,  33],
        [ 65,  42,  26],
        [ 53,  30,  14]],

       [[ 37,  28,  21],
        [ 38,  29,  22],
        [ 38,  29,  22],
        ...,
        [ 64,  41,  25],
        [ 75,  49,  34],
        [ 78,  52,  35]],

       [[ 37,  28,  21],
        [ 38,  29,  22],
        [ 38,  29,  22],
        ...,
        [ 64,  38,  21],
        [ 69,  43,  26],
        [ 73,  47,  30]]], dtype=uint8)
```

In [65]:
```
lionking_red == lionking_arr
```

Out[65]:
```
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 [59]:
```
plt.imshow(lionking_red)
```

Out[59]:
```
<matplotlib.image.AxesImage at 0x2174c9b5ca0>
```

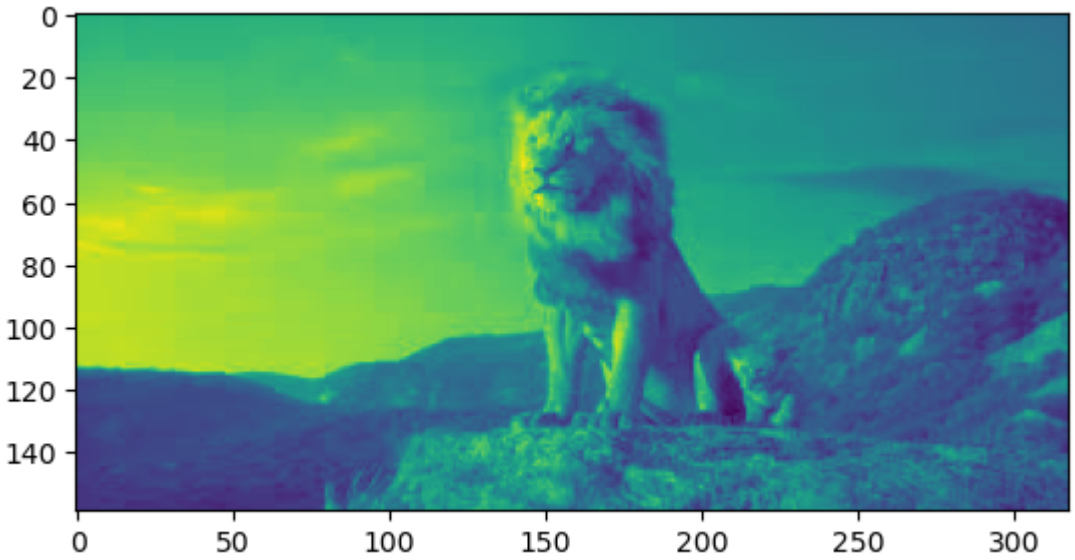


In [61]:
```
lionking_red.shape
```

Out[61]:
```
(159, 318, 3)
```

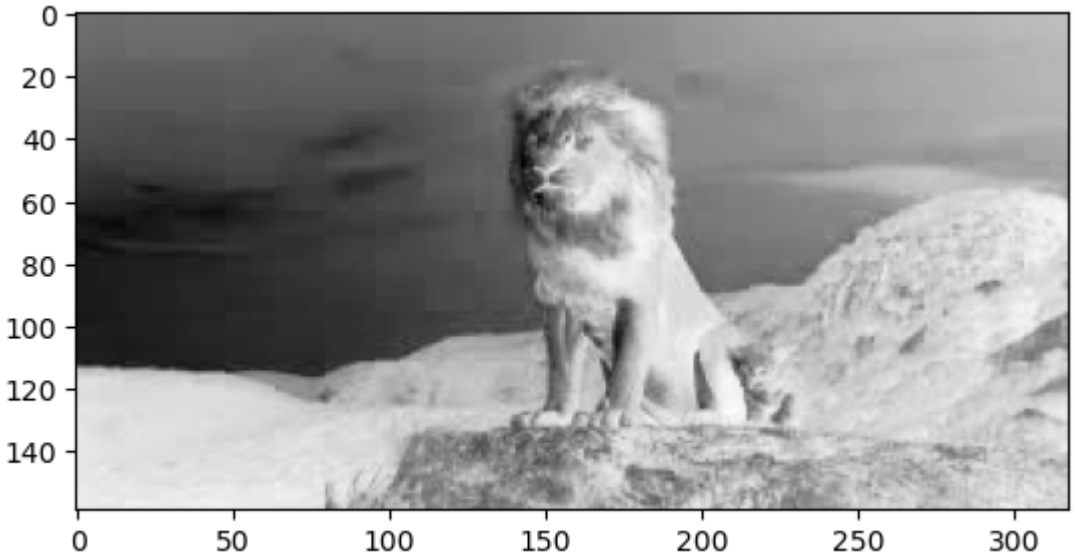
In [67]:
```
plt.imshow(lionking_red[:,:,0])
```

Out[67]:
```
<matplotlib.image.AxesImage at 0x21751cc9a90>
```



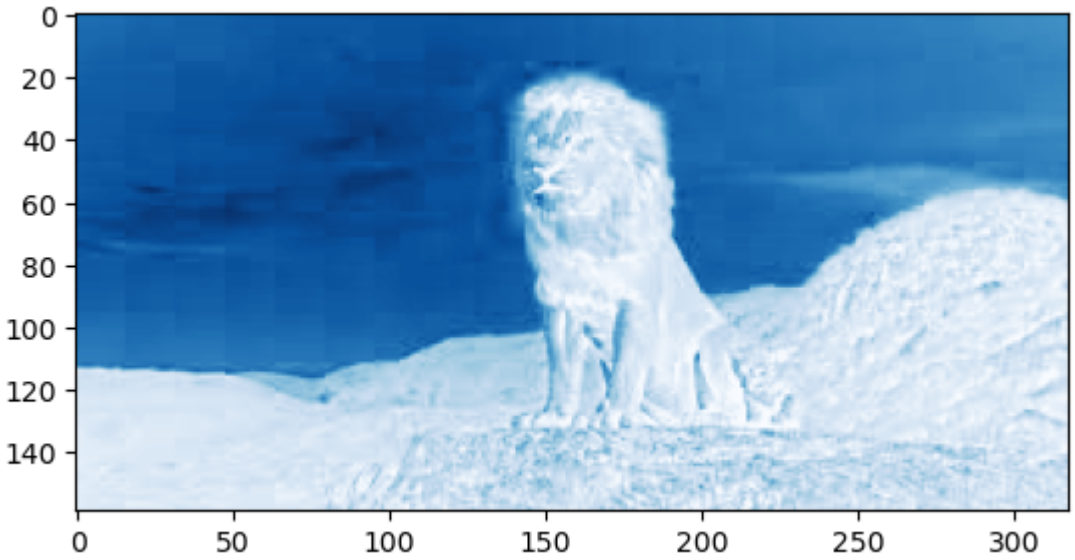
In [75]:
```
plt.imshow(lionking_red[:,:,0], cmap = 'Greys')
#cmap -- colour map we can browse diffrent colours using diffrent colour names in
```

Out[75]:
```
<matplotlib.image.AxesImage at 0x21751d5ec00>
```



In [79]:
```
plt.imshow(lionking_red[:,:,2], cmap = 'Blues')
```

Out[79]:
```
<matplotlib.image.AxesImage at 0x21751d5d160>
```



In [81]:
```
lionking_red[:,:,1]
```

Out[81]:
```
array([[146, 146, 146, ..., 102, 102, 101],
       [147, 147, 147, ..., 102, 102, 102],
       [147, 147, 147, ..., 103, 102, 102],
       ...,
       [ 28,  29,  29, ...,  47,  42,  30],
       [ 28,  29,  29, ...,  41,  49,  52],
       [ 28,  29,  29, ...,  38,  43,  47]], dtype=uint8)
```

In [83]:
```
lionking_red[:,:,2]
```

Out[83]:
```
array([[143, 143, 143, ..., 119, 119, 118],
       [144, 144, 144, ..., 119, 119, 119],
       [144, 144, 144, ..., 120, 119, 119],
       ...,
       [ 21,  22,  22, ...,  33,  26,  14],
       [ 21,  22,  22, ...,  25,  34,  35],
       [ 21,  22,  22, ...,  21,  26,  30]], dtype=uint8)
```

In [87]:
```
lionking_red[:,:,2] = 0 # we are manipulating the arrays
```

In [89]:
```
lionking_red[:,:,1]
```

Out[89]:
```
array([[146, 146, 146, ..., 102, 102, 101],
       [147, 147, 147, ..., 102, 102, 102],
       [147, 147, 147, ..., 103, 102, 102],
       ...,
       [ 28,  29,  29, ...,  47,  42,  30],
       [ 28,  29,  29, ...,  41,  49,  52],
       [ 28,  29,  29, ...,  38,  43,  47]], dtype=uint8)
```

In [91]:
```
lionking_red[:,:,1] = 0
```

In [93]:
```
plt.imshow(lionking_red)
#after manipulating the arrays we will get diffrent results of our image
```

Out[93]:
```
<matplotlib.image.AxesImage at 0x21752ec1850>
```

In [99]:
```
lionking_red[:,:,1]
```

Out[99]:
```
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 [97]:
```
lionking_red[:,:,2]
```

Out[97]:
```
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 [101]:
```
lionking_red
```

Out[101]:
```
array([[[161,   0,   0],
        [161,   0,   0],
        [161,   0,   0],
        ...,
        [ 93,   0,   0],
        [ 93,   0,   0],
        [ 92,   0,   0]],

       [[162,   0,   0],
        [162,   0,   0],
        [162,   0,   0],
        ...,
        [ 93,   0,   0],
        [ 93,   0,   0],
        [ 93,   0,   0]],

       [[162,   0,   0],
        [162,   0,   0],
        [162,   0,   0],
        ...,
        [ 94,   0,   0],
        [ 93,   0,   0],
        [ 93,   0,   0]],

       ...,

       [[ 37,   0,   0],
        [ 38,   0,   0],
        [ 38,   0,   0],
        ...,
        [ 70,   0,   0],
        [ 65,   0,   0],
        [ 53,   0,   0]],

       [[ 37,   0,   0],
        [ 38,   0,   0],
        [ 38,   0,   0],
        ...,
        [ 64,   0,   0],
        [ 75,   0,   0],
        [ 78,   0,   0]],

       [[ 37,   0,   0],
        [ 38,   0,   0],
        [ 38,   0,   0],
        ...,
        [ 64,   0,   0],
        [ 69,   0,   0],
        [ 73,   0,   0]]], dtype=uint8)
```

In [ ]:

In [ ]: