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]:
```
car_image=Image.open(r"C:\Users\hp\Downloads\car.jpg")
```

In [6]:
```
car_image
```

Out[6]:

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

Out[7]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [8]:
```
car_arr=np.asarray(car_image)
```

In [9]:
```
car_arr
```

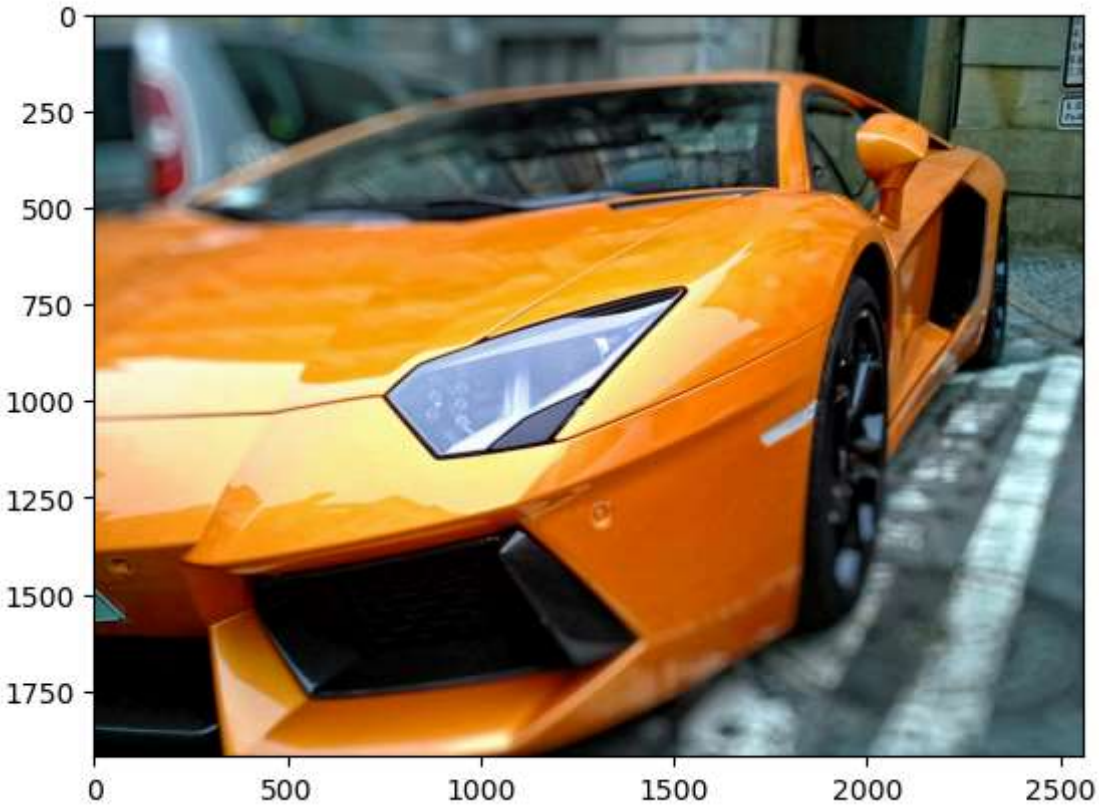
Out[9]:
```
array([[[101, 117, 104],
        [102, 118, 105],
        [102, 118, 105],
        ...,
        [ 99, 133, 135],
        [ 99, 133, 135],
        [102, 133, 136]],

       [[102, 118, 107],
        [102, 118, 107],
        [102, 118, 107],
        ...,
        [101, 132, 135],
        [101, 132, 135],
        [102, 133, 136]],

       [[102, 118, 107],
        [102, 118, 107],
        [103, 119, 108],
        ...,
        [101, 132, 135],
        [101, 132, 135],
        [102, 133, 136]],

       ...,

       [[  3,   3,   3],
        [  3,   3,   3],
        [  3,   3,   3],
        ...,
        [ 78, 118, 126],
        [ 78, 118, 126],
        [ 78, 118, 126]],

       [[  2,   2,   2],
        [  2,   2,   2],
        [  2,   2,   2],
        ...,
        [ 79, 119, 127],
        [ 79, 119, 127],
        [ 79, 119, 127]],

       [[  2,   2,   2],
        [  2,   2,   2],
        [  2,   2,   2],
        ...,
        [ 79, 119, 127],
        [ 79, 119, 127],
        [ 79, 119, 127]]], dtype=uint8)
```

In [10]:
```
type(car_arr)
```

Out[10]:
```
numpy.ndarray
```

In [11]:
```
plt.imshow(car_arr)
```

Out[11]:
```
<matplotlib.image.AxesImage at 0x2e721e57680>
```



In [12]:
```
car_arr.shape
```

Out[12]:
```
(1920, 2560, 3)
```

In [13]:
```
car_red=car_arr.copy()
```

In [14]:
```
car_red
```

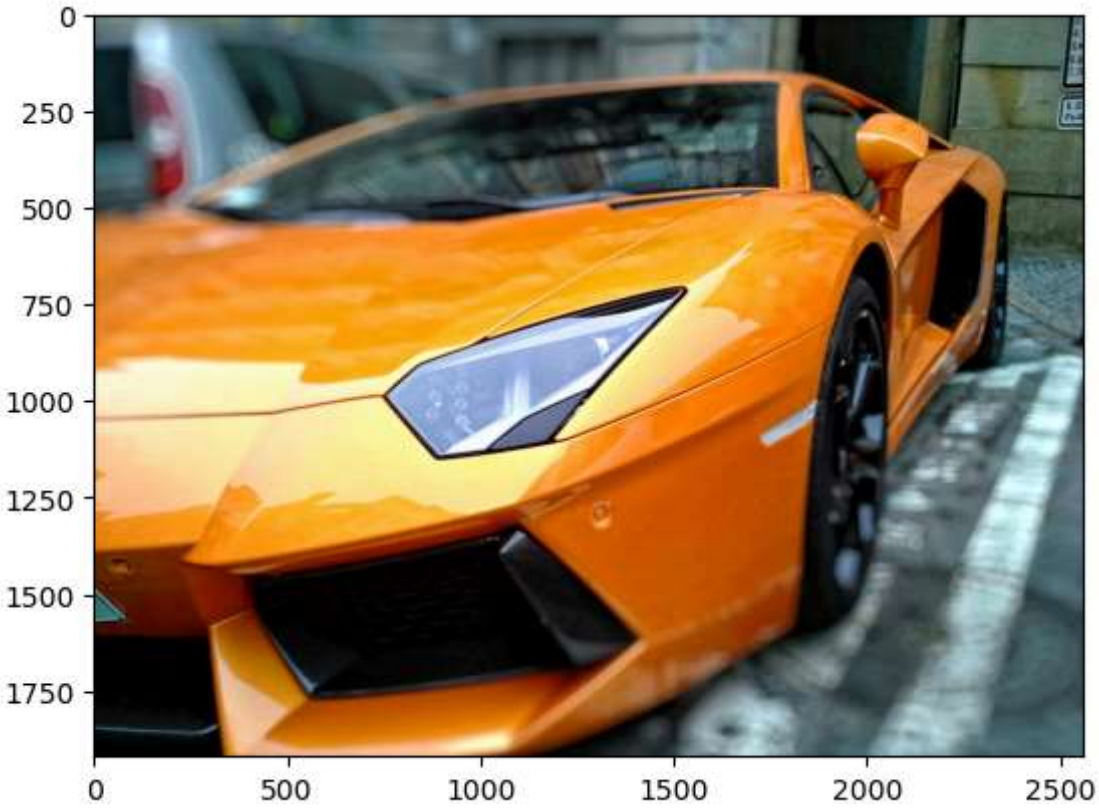
Out[14]:
```
array([[[101, 117, 104],
        [102, 118, 105],
        [102, 118, 105],
        ...,
        [ 99, 133, 135],
        [ 99, 133, 135],
        [102, 133, 136]],

       [[102, 118, 107],
        [102, 118, 107],
        [102, 118, 107],
        ...,
        [101, 132, 135],
        [101, 132, 135],
        [102, 133, 136]],

       [[102, 118, 107],
        [102, 118, 107],
        [103, 119, 108],
        ...,
        [101, 132, 135],
        [101, 132, 135],
        [102, 133, 136]],

       ...,

       [[  3,   3,   3],
        [  3,   3,   3],
        [  3,   3,   3],
        ...,
        [ 78, 118, 126],
        [ 78, 118, 126],
        [ 78, 118, 126]],

       [[  2,   2,   2],
        [  2,   2,   2],
        [  2,   2,   2],
        ...,
        [ 79, 119, 127],
        [ 79, 119, 127],
        [ 79, 119, 127]],

       [[  2,   2,   2],
        [  2,   2,   2],
        [  2,   2,   2],
        ...,
        [ 79, 119, 127],
        [ 79, 119, 127],
        [ 79, 119, 127]]], dtype=uint8)
```

In [15]:
```
car_arr==car_red
```

Out[15]:
```
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 [16]:
```
plt.imshow(car_red)
```

Out[16]:
```
<matplotlib.image.AxesImage at 0x2e723033b30>
```



In [17]:
```
car_red.shape
```

Out[17]:
```
(1920, 2560, 3)
```

In [18]:
```
plt.imshow(car_red[:,:,0])
```

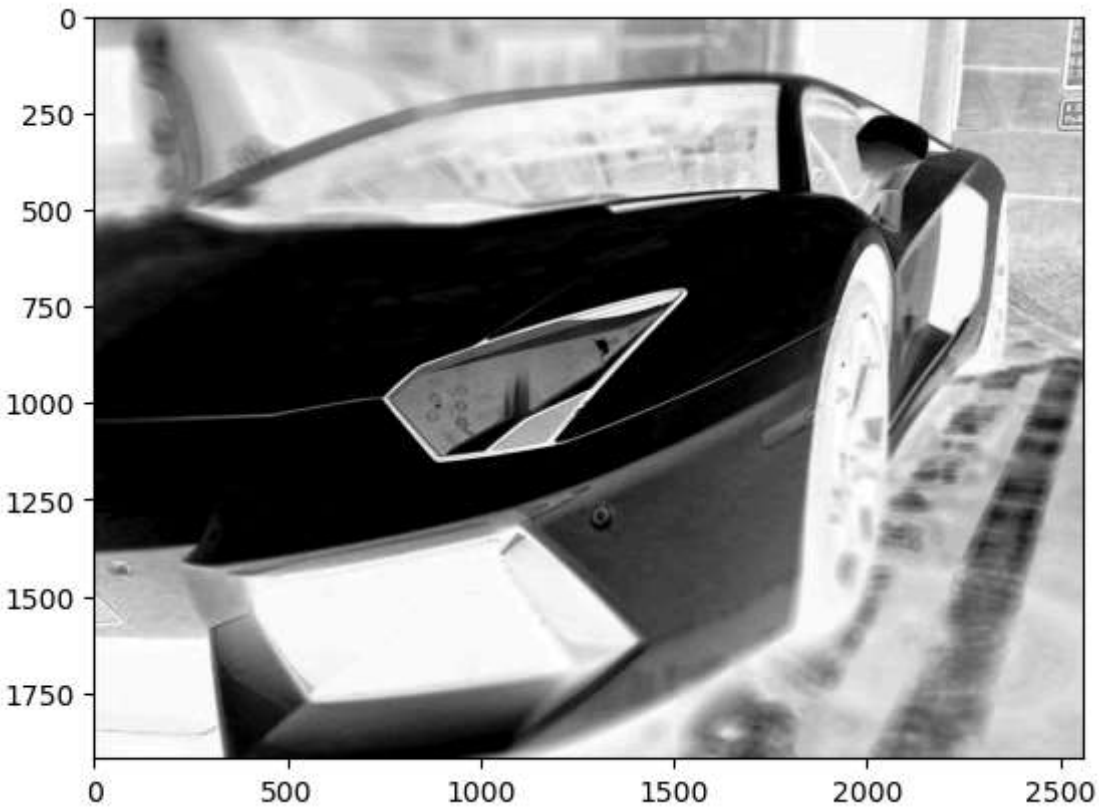
Out[18]:
```
<matplotlib.image.AxesImage at 0x2e7230c3a40>
```

In [19]:
```
car_red[:,:,0]
```

Out[19]:
```
array([[101, 102, 102, ...,  99,  99, 102],
       [102, 102, 102, ..., 101, 101, 102],
       [102, 102, 103, ..., 101, 101, 102],
       ...,
       [  3,   3,   3, ...,  78,  78,  78],
       [  2,   2,   2, ...,  79,  79,  79],
       [  2,   2,   2, ...,  79,  79,  79]], dtype=uint8)
```

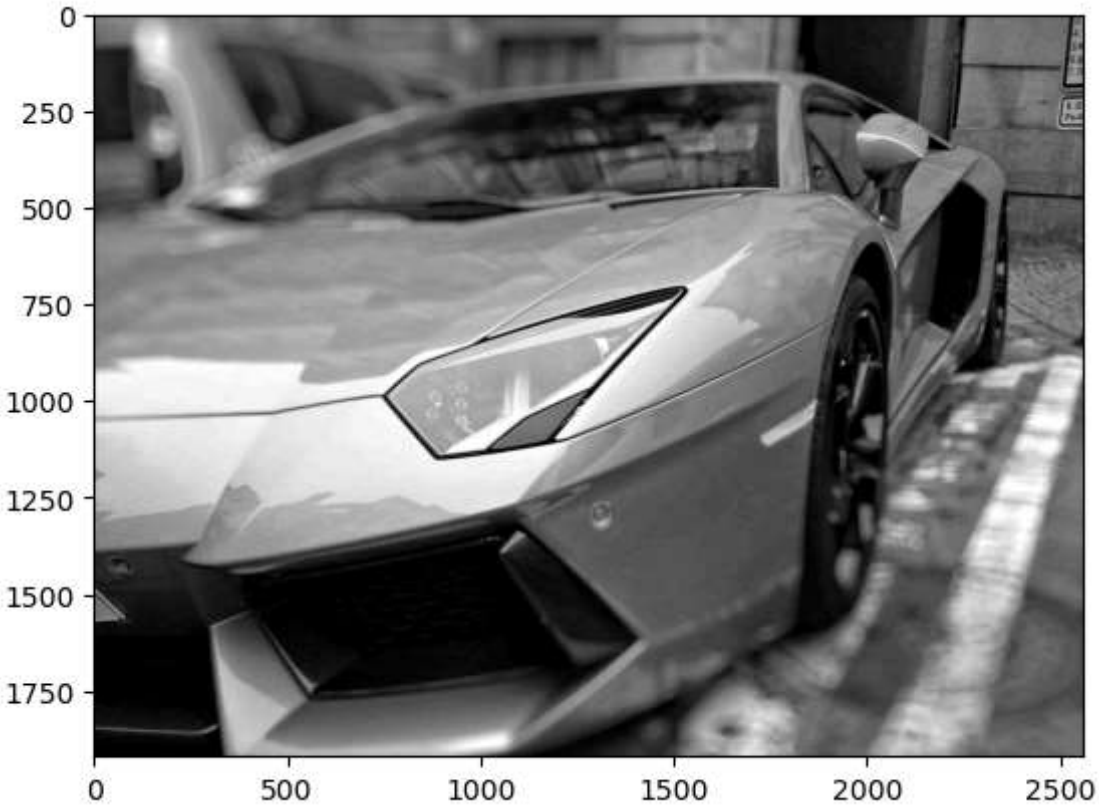
In [20]:
```
plt.imshow(car_red[:,:,0],cmap='Greys')
```

Out[20]:
```
<matplotlib.image.AxesImage at 0x2e72301ec60>
```



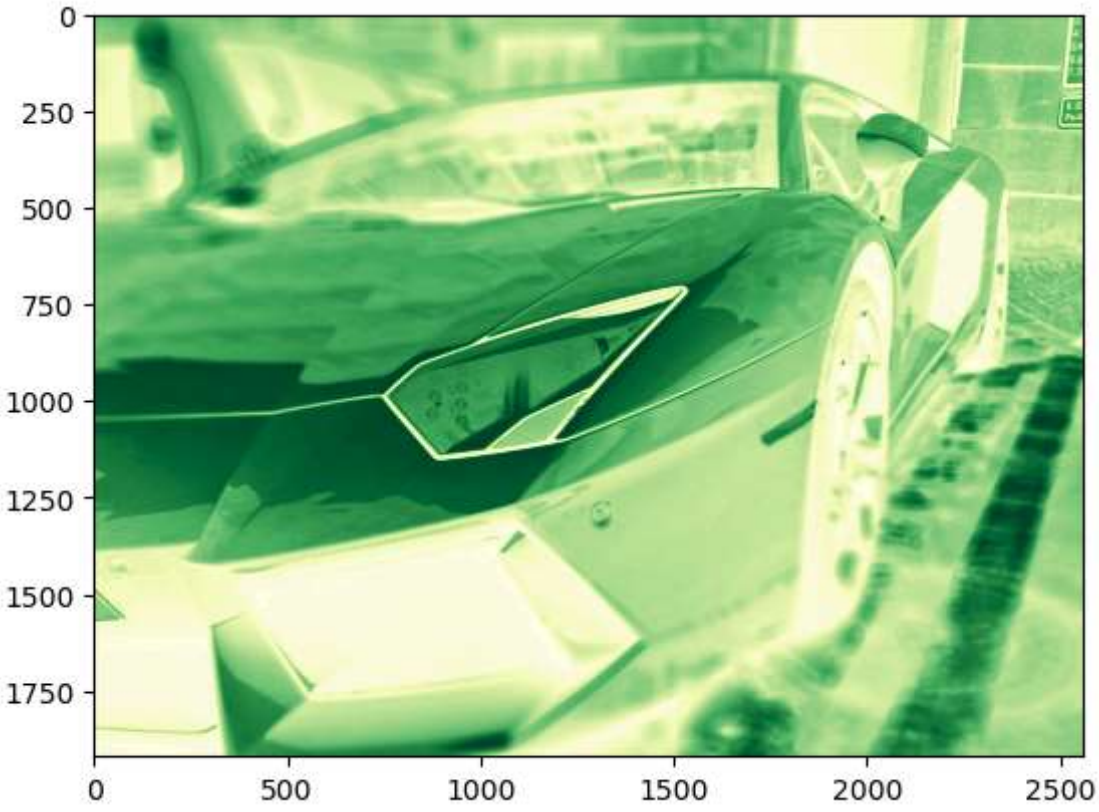
In [21]:
```
plt.imshow(car_red[:,:,1],cmap='grey')
```

Out[21]:
```
<matplotlib.image.AxesImage at 0x2e723195280>
```



In [22]:
```
plt.imshow(car_red[:,:,1],cmap='YlGn')
```

Out[22]: <matplotlib.image.AxesImage at 0x2e72322eb40>



In [23]:
```
car_red[:,:,0]
```

Out[23]:
```
array([[101, 102, 102, ...,  99,  99, 102],
       [102, 102, 102, ..., 101, 101, 102],
       [102, 102, 103, ..., 101, 101, 102],
       ...,
       [  3,   3,   3, ...,  78,  78,  78],
       [  2,   2,   2, ...,  79,  79,  79],
       [  2,   2,   2, ...,  79,  79,  79]], dtype=uint8)
```

In [24]:
```
car_red[:,:,1]
```

Out[24]:
```
array([[117, 118, 118, ..., 133, 133, 133],
       [118, 118, 118, ..., 132, 132, 133],
       [118, 118, 119, ..., 132, 132, 133],
       ...,
       [  3,   3,   3, ..., 118, 118, 118],
       [  2,   2,   2, ..., 119, 119, 119],
       [  2,   2,   2, ..., 119, 119, 119]], dtype=uint8)
```

In [25]:
```
car_red[:,:,2]
```

Out[25]:
```
array([[104, 105, 105, ..., 135, 135, 136],
       [107, 107, 107, ..., 135, 135, 136],
       [107, 107, 108, ..., 135, 135, 136],
       ...,
       [  3,   3,   3, ..., 126, 126, 126],
       [  2,   2,   2, ..., 127, 127, 127],
       [  2,   2,   2, ..., 127, 127, 127]], dtype=uint8)
```

In [26]:
```
car_red[:,:,1]=0
```

In [27]:
```
car_red[:,:,1]
```

Out[27]:
```
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 [28]:
```
plt.imshow(car_red)
```

Out[28]:
```
<matplotlib.image.AxesImage at 0x2e72329df40>
```

In [29]:
```
car_red[:,:,2]
```

Out[29]:
```
array([[104, 105, 105, ..., 135, 135, 136],
       [107, 107, 107, ..., 135, 135, 136],
       [107, 107, 108, ..., 135, 135, 136],
       ...,
       [  3,   3,   3, ..., 126, 126, 126],
       [  2,   2,   2, ..., 127, 127, 127],
       [  2,   2,   2, ..., 127, 127, 127]], dtype=uint8)
```

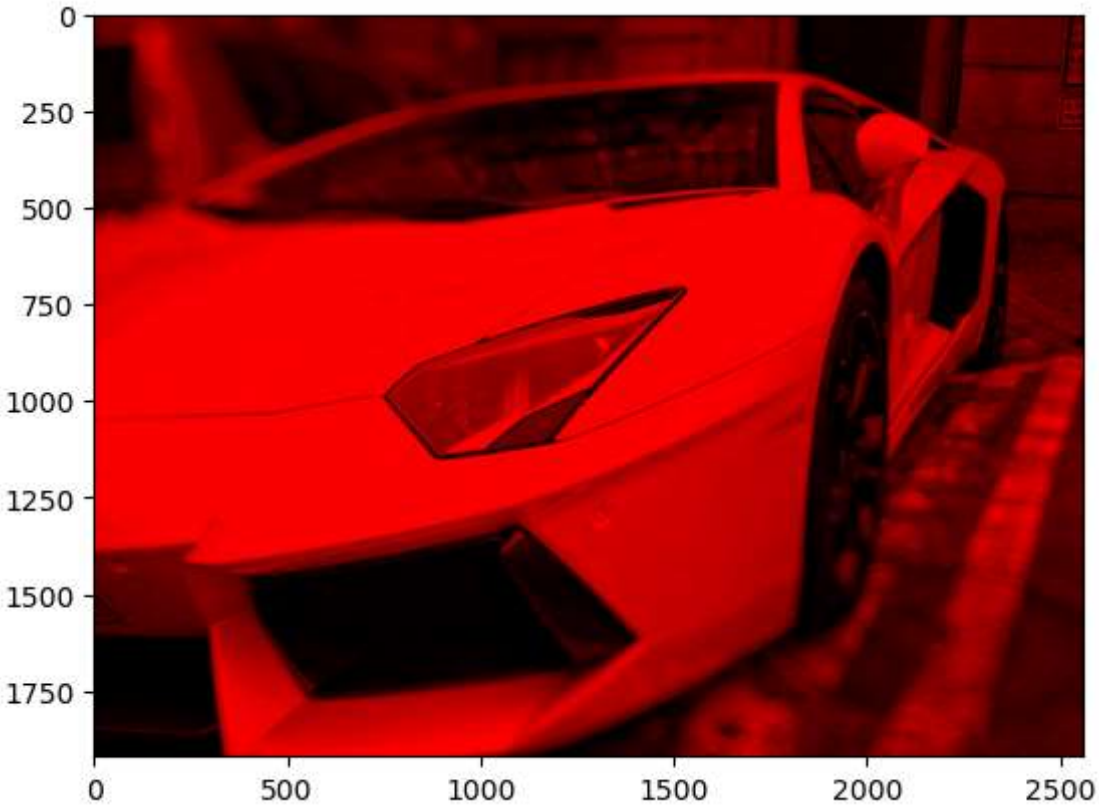
In [30]:
```
car_red[:,:,2]=0
```

In [31]:
```
car_red[:,:,2]
```

Out[31]:
```
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 [32]:
```
plt.imshow(car_red)
```

Out[32]:
```
<matplotlib.image.AxesImage at 0x2e72aee5d90>
```



In [33]:
```
car_arr
```

Out[33]:
```
array([[[101, 117, 104],
        [102, 118, 105],
        [102, 118, 105],
        ...,
        [ 99, 133, 135],
        [ 99, 133, 135],
        [102, 133, 136]],

       [[102, 118, 107],
        [102, 118, 107],
        [102, 118, 107],
        ...,
        [101, 132, 135],
        [101, 132, 135],
        [102, 133, 136]],

       [[102, 118, 107],
        [102, 118, 107],
        [103, 119, 108],
        ...,
        [101, 132, 135],
        [101, 132, 135],
        [102, 133, 136]],

       ...,

       [[  3,   3,   3],
        [  3,   3,   3],
        [  3,   3,   3],
        ...,
        [ 78, 118, 126],
        [ 78, 118, 126],
        [ 78, 118, 126]],

       [[  2,   2,   2],
        [  2,   2,   2],
        [  2,   2,   2],
        ...,
        [ 79, 119, 127],
        [ 79, 119, 127],
        [ 79, 119, 127]],

       [[  2,   2,   2],
        [  2,   2,   2],
        [  2,   2,   2],
        ...,
        [ 79, 119, 127],
        [ 79, 119, 127],
        [ 79, 119, 127]]], dtype=uint8)
```

In [34]:
```
car_red
```

Out[34]:
```
array([[[101,   0,   0],
        [102,   0,   0],
        [102,   0,   0],
        ...,
        [ 99,   0,   0],
        [ 99,   0,   0],
        [102,   0,   0]],

       [[102,   0,   0],
        [102,   0,   0],
        [102,   0,   0],
        ...,
        [101,   0,   0],
        [101,   0,   0],
        [102,   0,   0]],

       [[102,   0,   0],
        [102,   0,   0],
        [103,   0,   0],
        ...,
        [101,   0,   0],
        [101,   0,   0],
        [102,   0,   0]],

       ...,

       [[  3,   0,   0],
        [  3,   0,   0],
        [  3,   0,   0],
        ...,
        [ 78,   0,   0],
        [ 78,   0,   0],
        [ 78,   0,   0]],

       [[  2,   0,   0],
        [  2,   0,   0],
        [  2,   0,   0],
        ...,
        [ 79,   0,   0],
        [ 79,   0,   0],
        [ 79,   0,   0]],

       [[  2,   0,   0],
        [  2,   0,   0],
        [  2,   0,   0],
        ...,
        [ 79,   0,   0],
        [ 79,   0,   0],
        [ 79,   0,   0]]], dtype=uint8)
```

In [35]:
```
car_image
```

Out[35]:

In [36]:
```
arr1=np.asarray(car_image)
```

In [37]:
```
type(arr1)
```

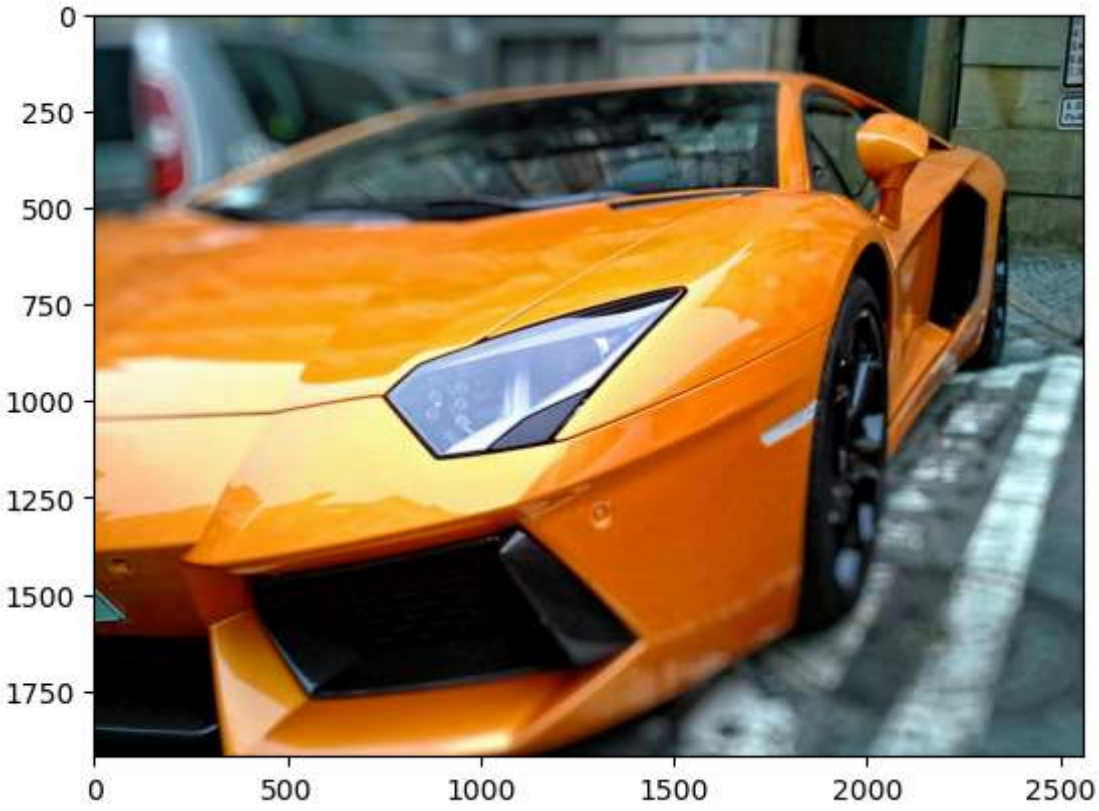
Out[37]:
```
numpy.ndarray
```

In [38]:
```
arr1.shape
```

Out[38]:
```
(1920, 2560, 3)
```

In [39]:
```
plt.imshow(arr1)
```

Out[39]:
```
<matplotlib.image.AxesImage at 0x2e72af3d8e0>
```

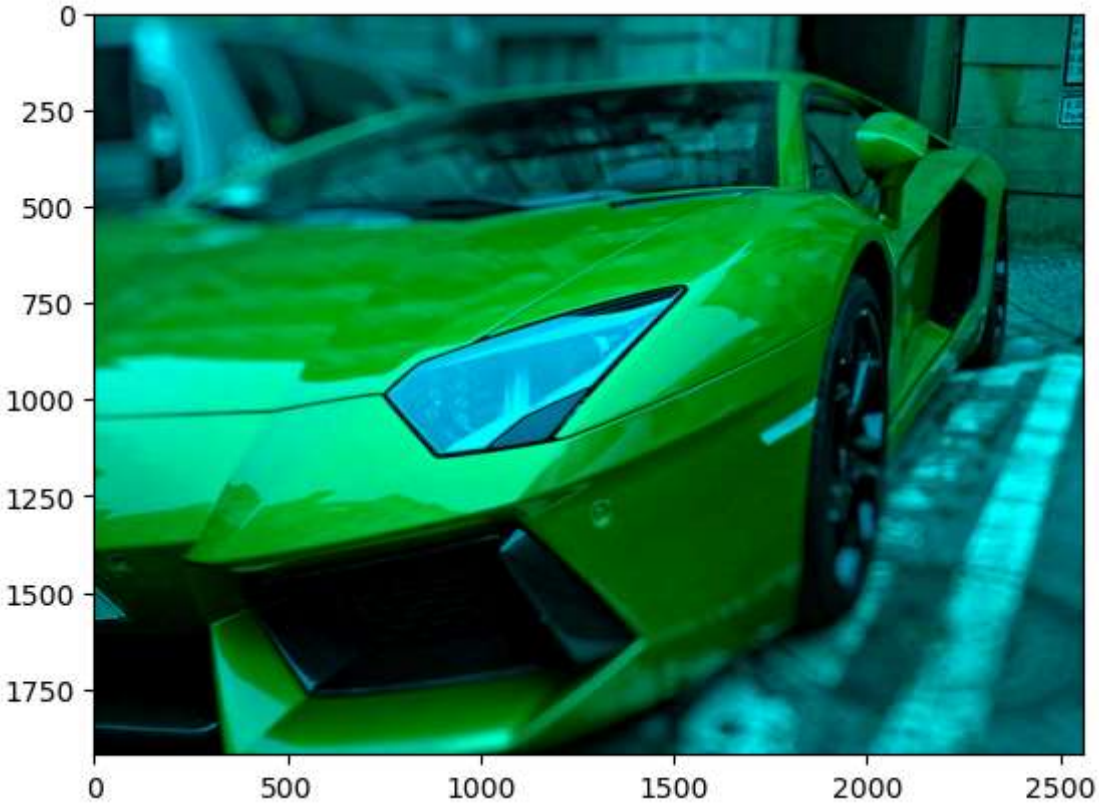


In [40]:
```
car_image1=arr1.copy()
```

In [41]:
```
car_image1[:,:,0]=0
```

In [42]:
```
plt.imshow(car_image1)
```

Out[42]:
```
<matplotlib.image.AxesImage at 0x2e721e75bb0>
```



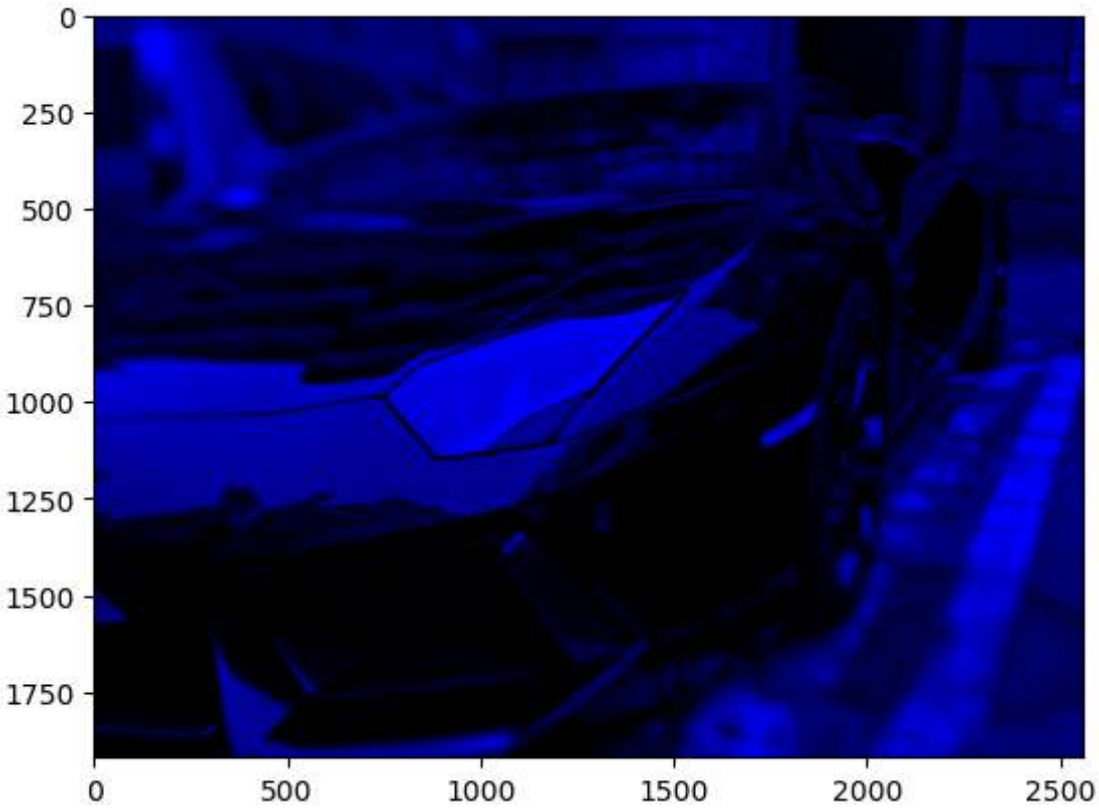
In [43]:
```
car_image1[:,:,1]
```

Out[43]:
```
array([[117, 118, 118, ..., 133, 133, 133],
       [118, 118, 118, ..., 132, 132, 133],
       [118, 118, 119, ..., 132, 132, 133],
       ...,
       [  3,   3,   3, ..., 118, 118, 118],
       [  2,   2,   2, ..., 119, 119, 119],
       [  2,   2,   2, ..., 119, 119, 119]], dtype=uint8)
```

In [44]:
```
car_image1[:,:,1]=0
```

In [45]:
```
plt.imshow(car_image1)
```

Out[45]:
```
<matplotlib.image.AxesImage at 0x2e72ea440e0>
```



Project 1 is completed

In [ ]:

In [ ]:

In [ ]: