In [2]:
```
import numpy as np
```

In [4]:
```
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 [8]:
```
ones_arr*255
```

Out[8]:
```
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 [10]:
```
import matplotlib.pyplot as plt
```

In [11]:
```
#!matplotlib inline # all the graph should keep inside the line
```

In [12]:
```
from PIL import Image # python imaging library
```

In [13]:
```
Car_img=Image.open(r"D:\Sid 17-03-2025\SIDDHARTH BOSE\FSDS & GEN AI\March\13th -
```

In [14]:
```
Car_img
```

Out[14]:

In [15]:
```
type(Car_img)
```

Out[15]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [16]:
```
Car_arr=np.asarray(Car_img)
Car_arr
```

Out[16]:
```
array([[[212, 210, 213],
        [212, 210, 213],
        [212, 210, 213],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       [[213, 211, 214],
        [213, 211, 214],
        [213, 211, 214],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       [[213, 211, 214],
        [213, 211, 214],
        [213, 211, 214],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       ...,

       [[143, 133, 132],
        [144, 134, 133],
        [144, 134, 133],
        ...,
        [136, 132, 133],
        [139, 135, 136],
        [142, 138, 139]],

       [[142, 132, 131],
        [143, 133, 132],
        [142, 132, 131],
        ...,
        [135, 130, 134],
        [137, 133, 134],
        [139, 135, 136]],

       [[142, 132, 131],
        [143, 133, 132],
        [141, 131, 130],
        ...,
        [133, 128, 132],
        [134, 130, 131],
        [135, 131, 132]]], dtype=uint8)
```

In [17]:
```
type(Car_arr)
```

Out[17]:
```
numpy.ndarray
```

In [21]:
```
plt.imshow(Car_arr)
#plt.show(horse_arr) new os
```

Out[21]:
```
<matplotlib.figure.AxesImage at 0x274beec8740>
```

In [26]:
```
Car_arr.shape
```

Out[26]:
```
(668, 1000, 3)
```

In [29]:
```
Car_red = Car_arr.copy()
```

In [32]:
```
Car_red
```

Out[32]:
```
array([[[212, 210, 213],
        [212, 210, 213],
        [212, 210, 213],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       [[213, 211, 214],
        [213, 211, 214],
        [213, 211, 214],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       [[213, 211, 214],
        [213, 211, 214],
        [213, 211, 214],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       ...,

       [[143, 133, 132],
        [144, 134, 133],
        [144, 134, 133],
        ...,
        [136, 132, 133],
        [139, 135, 136],
        [142, 138, 139]],

       [[142, 132, 131],
        [143, 133, 132],
        [142, 132, 131],
        ...,
        [135, 130, 134],
        [137, 133, 134],
        [139, 135, 136]],

       [[142, 132, 131],
        [143, 133, 132],
        [141, 131, 130],
        ...,
        [133, 128, 132],
        [134, 130, 131],
        [135, 131, 132]]], dtype=uint8)
```

In [34]:
```
Car_arr ==Car_red
```

Out[34]:
```
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 [36]:
```
plt.imshow(Car_red)
```

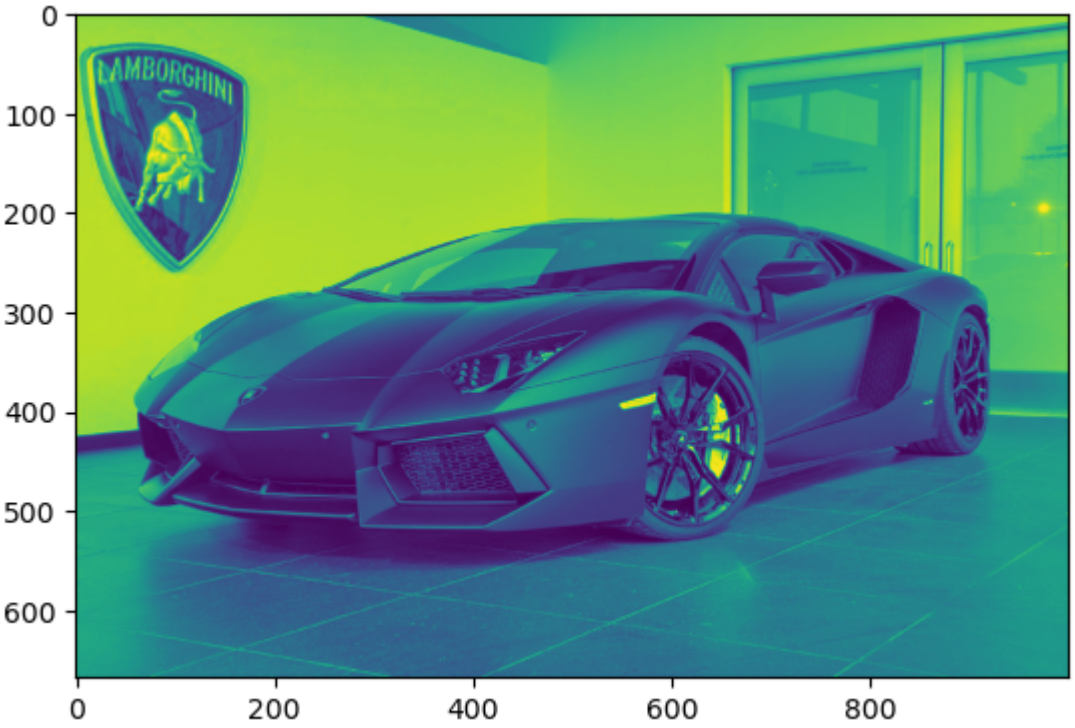
Out[36]:
```
<matplotlib.image.AxesImage at 0x274be64fd10>
```

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

Out[38]:
```
(668, 1000, 3)
```

In [40]:
```
# R G B
plt.imshow(Car_red[:,:,0])
```

Out[40]:
```
<matplotlib.image.AxesImage at 0x274bf4e71d0>
```

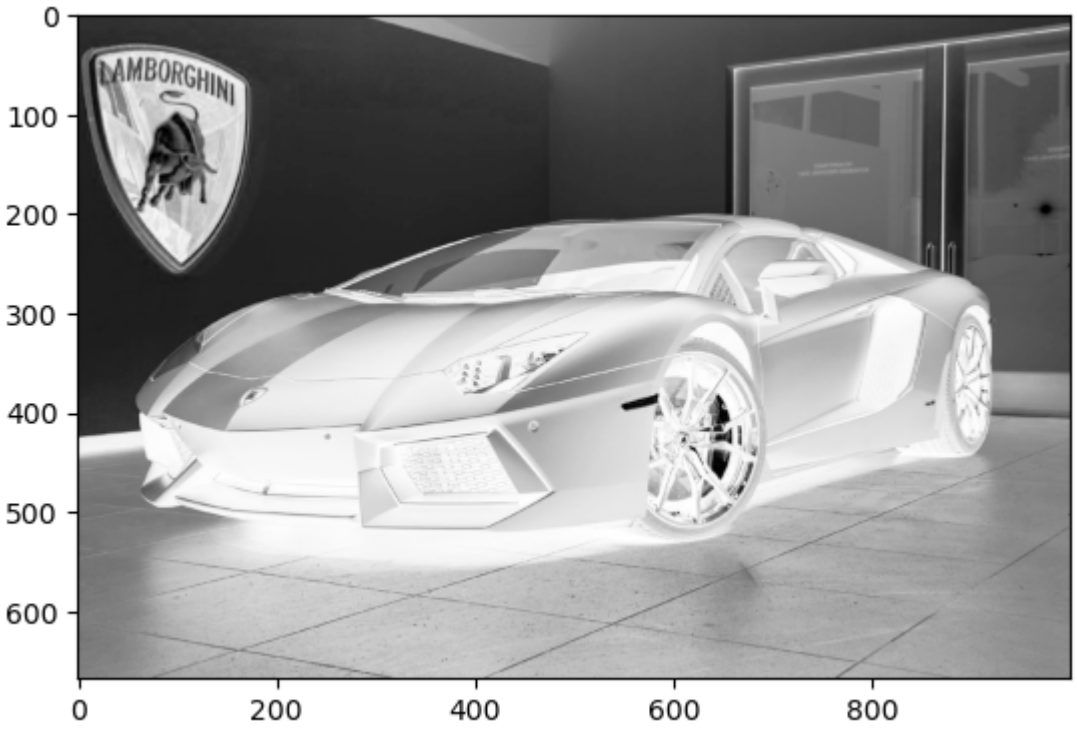


In [42]:
```
Car_red[:,:,0]
```

Out[42]:
```
array([[212, 212, 212, ..., 216, 216, 216],
       [213, 213, 213, ..., 216, 216, 216],
       [213, 213, 213, ..., 216, 216, 216],
       ...,
       [143, 144, 144, ..., 136, 139, 142],
       [142, 143, 142, ..., 135, 137, 139],
       [142, 143, 141, ..., 133, 134, 135]], dtype=uint8)
```

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

Out[44]:
```
<matplotlib.image.AxesImage at 0x274bf526630>
```

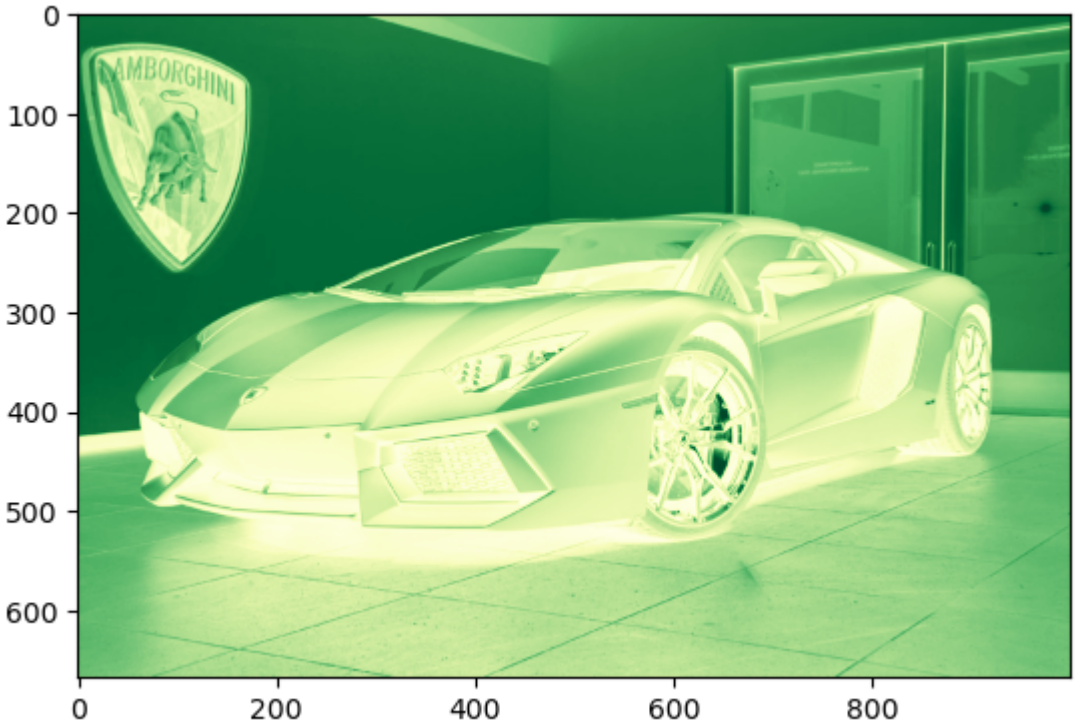


In [60]:
```
plt.imshow(Car_red[:,:,1], cmap='grey')
```

Out[60]:
```
<matplotlib.image.AxesImage at 0x274c6ab1d90>
```

In [47]:
```
plt.imshow(Car_red[:,:,1], cmap='YlGn')
#plt.show()
```

Out[47]: <matplotlib.image.AxesImage at 0x274bf489910>

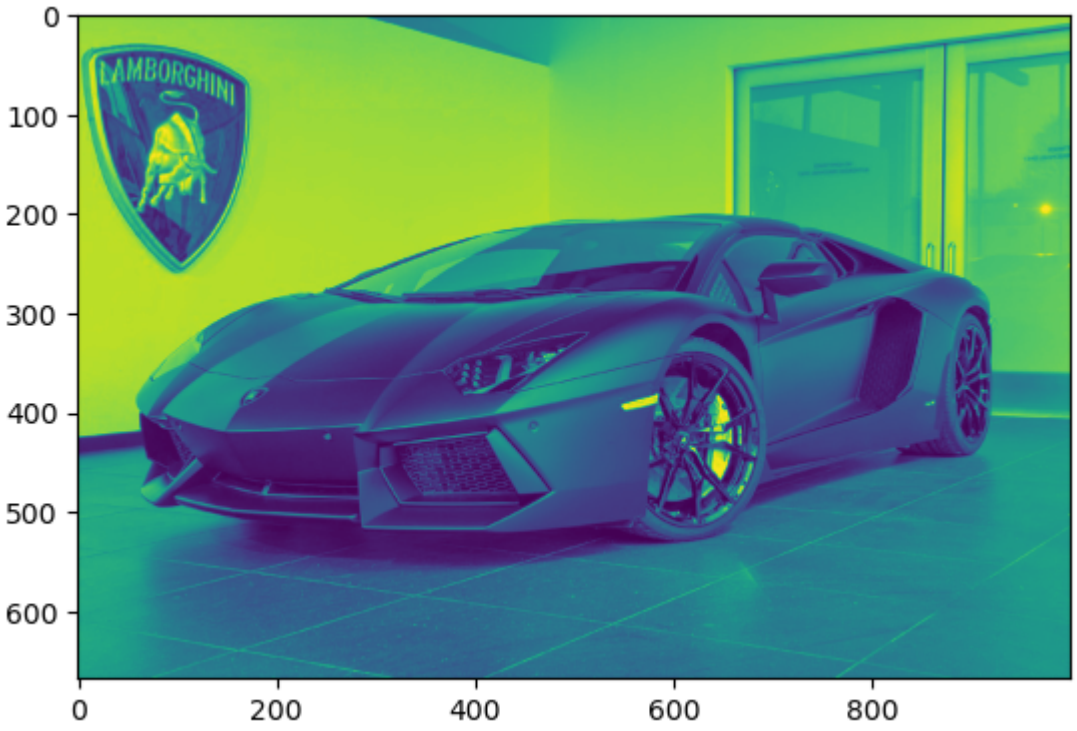


In [62]:
```
Car_red[:,:,0]
```

Out[62]:
```
array([[212, 212, 212, ..., 216, 216, 216],
       [213, 213, 213, ..., 216, 216, 216],
       [213, 213, 213, ..., 216, 216, 216],
       ...,
       [143, 144, 144, ..., 136, 139, 142],
       [142, 143, 142, ..., 135, 137, 139],
       [142, 143, 141, ..., 133, 134, 135]], dtype=uint8)
```

In [66]:
```
plt.imshow(Car_red[:,:,0])
```

Out[66]:
```
<matplotlib.image.AxesImage at 0x274c6c2be90>
```

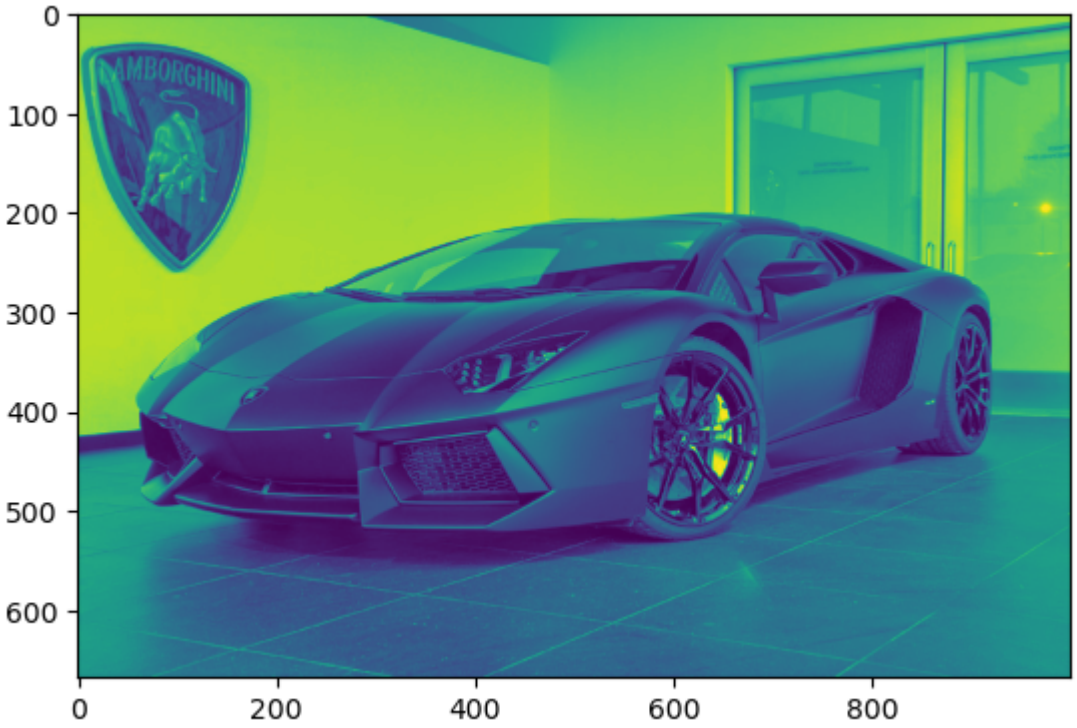


In [68]:
```
Car_red[:,:,1]
```

Out[68]:
```
array([[210, 210, 210, ..., 214, 214, 214],
       [211, 211, 211, ..., 214, 214, 214],
       [211, 211, 211, ..., 214, 214, 214],
       ...,
       [133, 134, 134, ..., 132, 135, 138],
       [132, 133, 132, ..., 130, 133, 135],
       [132, 133, 131, ..., 128, 130, 131]], dtype=uint8)
```

In [70]:
```
plt.imshow(Car_red[:,:,1])
```

Out[70]:
```
<matplotlib.image.AxesImage at 0x274c6a1e930>
```

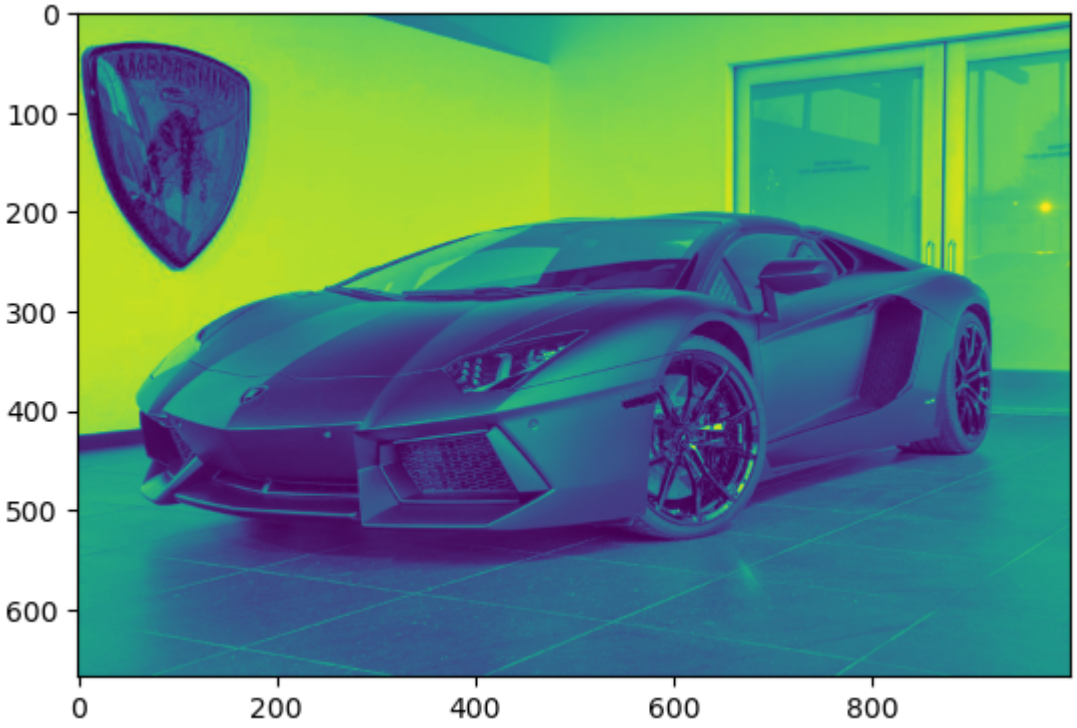


In [72]:
```
Car_red[:,:,2]
```

Out[72]:
```
array([[213, 213, 213, ..., 217, 217, 217],
       [214, 214, 214, ..., 217, 217, 217],
       [214, 214, 214, ..., 217, 217, 217],
       ...,
       [132, 133, 133, ..., 133, 136, 139],
       [131, 132, 131, ..., 134, 134, 136],
       [131, 132, 130, ..., 132, 131, 132]], dtype=uint8)
```

In [74]:
```
plt.imshow(Car_red[:,:,2])
```

Out[74]:
```
<matplotlib.image.AxesImage at 0x274bf4bf110>
```



In [76]:
```
Car_red[:,:,1] = 0
```

In [78]:
```
Car_red[:,:,1]
```

Out[78]:
```
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 [80]:
```
plt.imshow(Car_red)
```

Out[80]:
```
<matplotlib.image.AxesImage at 0x274c6b4b110>
```

In [82]:
```
Car_red[:,:,2]
```

Out[82]:
```
array([[213, 213, 213, ..., 217, 217, 217],
       [214, 214, 214, ..., 217, 217, 217],
       [214, 214, 214, ..., 217, 217, 217],
       ...,
       [132, 133, 133, ..., 133, 136, 139],
       [131, 132, 131, ..., 134, 134, 136],
       [131, 132, 130, ..., 132, 131, 132]], dtype=uint8)
```

In [84]:
```
Car_red[:,:,2]=0
```

In [86]:
```
Car_red[:,:,2]
```

Out[86]:
```
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 [88]:
```
plt.imshow(Car_red)
```

Out[88]:
```
<matplotlib.image.AxesImage at 0x274c704ef00>
```

In [90]:
```
Car_arr
```

Out[90]:
```
array([[[212, 210, 213],
        [212, 210, 213],
        [212, 210, 213],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       [[213, 211, 214],
        [213, 211, 214],
        [213, 211, 214],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       [[213, 211, 214],
        [213, 211, 214],
        [213, 211, 214],
        ...,
        [216, 214, 217],
        [216, 214, 217],
        [216, 214, 217]],

       ...,

       [[143, 133, 132],
        [144, 134, 133],
        [144, 134, 133],
        ...,
        [136, 132, 133],
        [139, 135, 136],
        [142, 138, 139]],

       [[142, 132, 131],
        [143, 133, 132],
        [142, 132, 131],
        ...,
        [135, 130, 134],
        [137, 133, 134],
        [139, 135, 136]],

       [[142, 132, 131],
        [143, 133, 132],
        [141, 131, 130],
        ...,
        [133, 128, 132],
        [134, 130, 131],
        [135, 131, 132]]], dtype=uint8)
```

In [92]:
```
Car_red
```

Out[92]:
```
array([[[212,   0,   0],
        [212,   0,   0],
        [212,   0,   0],
        ...,
        [216,   0,   0],
        [216,   0,   0],
        [216,   0,   0]],

       [[213,   0,   0],
        [213,   0,   0],
        [213,   0,   0],
        ...,
        [216,   0,   0],
        [216,   0,   0],
        [216,   0,   0]],

       [[213,   0,   0],
        [213,   0,   0],
        [213,   0,   0],
        ...,
        [216,   0,   0],
        [216,   0,   0],
        [216,   0,   0]],

       ...,

       [[143,   0,   0],
        [144,   0,   0],
        [144,   0,   0],
        ...,
        [136,   0,   0],
        [139,   0,   0],
        [142,   0,   0]],

       [[142,   0,   0],
        [143,   0,   0],
        [142,   0,   0],
        ...,
        [135,   0,   0],
        [137,   0,   0],
        [139,   0,   0]],

       [[142,   0,   0],
        [143,   0,   0],
        [141,   0,   0],
        ...,
        [133,   0,   0],
        [134,   0,   0],
        [135,   0,   0]]], dtype=uint8)
```

In [94]:
```
Car_img
```

Out[94]:

In [96]:
```
arr1=np.asarray(Car_img)
```

In [98]:
```
type(arr1)
```

Out[98]:
```
numpy.ndarray
```

In [100…
```
arr1.shape
```

Out[100…
```
(668, 1000, 3)
```

In [102…
```
plt.imshow(arr1)
```

Out[102…
```
<matplotlib.image.AxesImage at 0x274c6b638f0>
```

In [104…
```
Car_img1 = arr1.copy()
```

In [106…
```
Car_img1[:,:,0] = 0
```

In [108…
```
plt.imshow(Car_img1)
```

Out[108… <matplotlib.image.AxesImage at 0x274c70e3590>

In [110…
```
Car_img1[:,:,1]
```

Out[110…
```
array([[210, 210, 210, ..., 214, 214, 214],
       [211, 211, 211, ..., 214, 214, 214],
       [211, 211, 211, ..., 214, 214, 214],
       ...,
       [133, 134, 134, ..., 132, 135, 138],
       [132, 133, 132, ..., 130, 133, 135],
       [132, 133, 131, ..., 128, 130, 131]], dtype=uint8)
```

In [112…
```
Car_img1[:,:,1]=0
```

In [114…
```
plt.imshow(Car_img1)
```

Out[114…
```
<matplotlib.image.AxesImage at 0x274c6f330e0>
```