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

In [2]:
```
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]:
```
import matplotlib.pyplot as plt
```

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

In [8]:
```
from PIL import Image #PIL=python imaging library
```

In [9]:
```
horse=Image.open(r"C:\Users\HP\OneDrive\Pictures\download (1).jpeg")
horse
```

Out[9]:

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

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

In [11]:
```
horse_arr=np.asarray(horse)
horse_arr
```

Out[11]:
```
array([[[115, 134, 140],
        [116, 135, 141],
        [116, 135, 141],
        ...,
        [135, 153, 157],
        [135, 153, 157],
        [133, 151, 155]],

       [[117, 136, 142],
        [118, 137, 143],
        [118, 137, 143],
        ...,
        [135, 153, 157],
        [134, 152, 156],
        [133, 151, 155]],

       [[119, 138, 144],
        [120, 139, 145],
        [121, 140, 146],
        ...,
        [134, 152, 156],
        [134, 152, 156],
        [133, 151, 155]],

       ...,

       [[101, 111, 110],
        [107, 117, 116],
        [109, 119, 118],
        ...,
        [103, 114, 118],
        [101, 112, 116],
        [103, 114, 118]],

       [[102, 112, 111],
        [108, 118, 117],
        [110, 120, 119],
        ...,
        [111, 122, 126],
        [111, 122, 126],
        [110, 121, 125]],

       [[103, 113, 112],
        [109, 119, 118],
        [111, 121, 120],
        ...,
        [120, 131, 135],
        [121, 132, 136],
        [120, 131, 135]]], dtype=uint8)
```

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

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

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

Out[13]: (148, 265, 3)

In [19]:
```
plt.imshow(horse_arr)
plt.show()
```

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

Out[20]: numpy.ndarray

In [21]:
```
horse_arr.shape
```

Out[21]: (148, 265, 3)

In [ ]:

In [18]:
```
horse_red=horse_arr.copy()
horse_red
```

Out[18]:
```
array([[[115, 134, 140],
        [116, 135, 141],
        [116, 135, 141],
        ...,
        [135, 153, 157],
        [135, 153, 157],
        [133, 151, 155]],

       [[117, 136, 142],
        [118, 137, 143],
        [118, 137, 143],
        ...,
        [135, 153, 157],
        [134, 152, 156],
        [133, 151, 155]],

       [[119, 138, 144],
        [120, 139, 145],
        [121, 140, 146],
        ...,
        [134, 152, 156],
        [134, 152, 156],
        [133, 151, 155]],

       ...,

       [[101, 111, 110],
        [107, 117, 116],
        [109, 119, 118],
        ...,
        [103, 114, 118],
        [101, 112, 116],
        [103, 114, 118]],

       [[102, 112, 111],
        [108, 118, 117],
        [110, 120, 119],
        ...,
        [111, 122, 126],
        [111, 122, 126],
        [110, 121, 125]],

       [[103, 113, 112],
        [109, 119, 118],
        [111, 121, 120],
        ...,
        [120, 131, 135],
        [121, 132, 136],
        [120, 131, 135]]], dtype=uint8)
```

In [22]:
```
horse_arr==horse_red
```

Out[22]:
```
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 [24]:
```
plt.imshow(horse_red)
plt.show()
```

In [25]:
```
horse_red.shape
```

Out[25]: (148, 265, 3)

In [26]:
```
plt.imshow(horse_red[:,:,0])
```

Out[26]: <matplotlib.image.AxesImage at 0x10cd8a5f9d0>

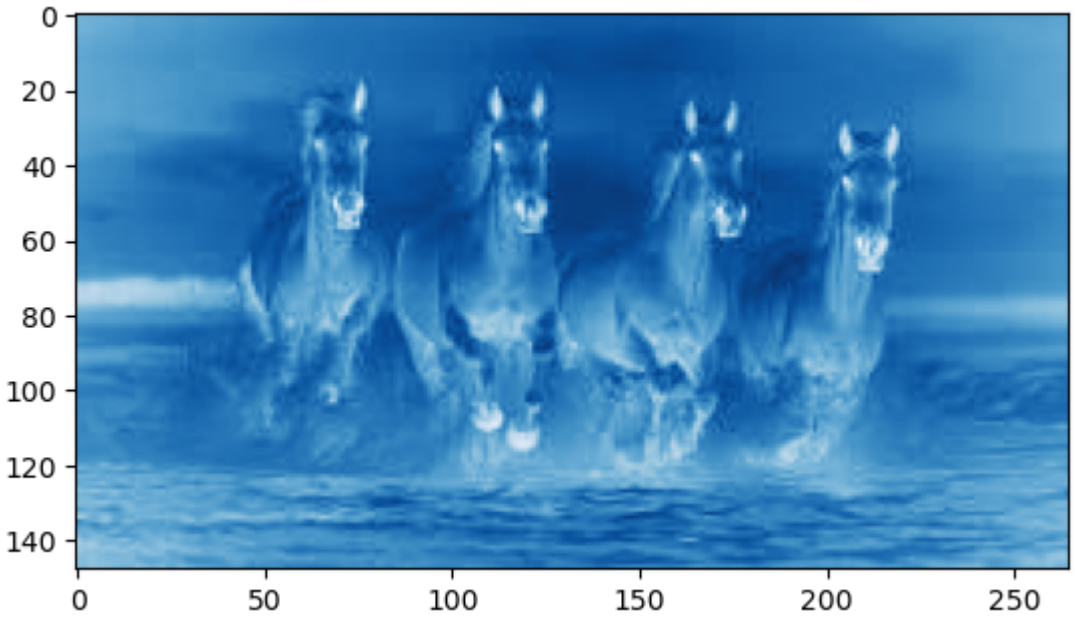
In [27]:
```
plt.show()
```

In [29]:
```
print(horse_red[:,:,0])
```

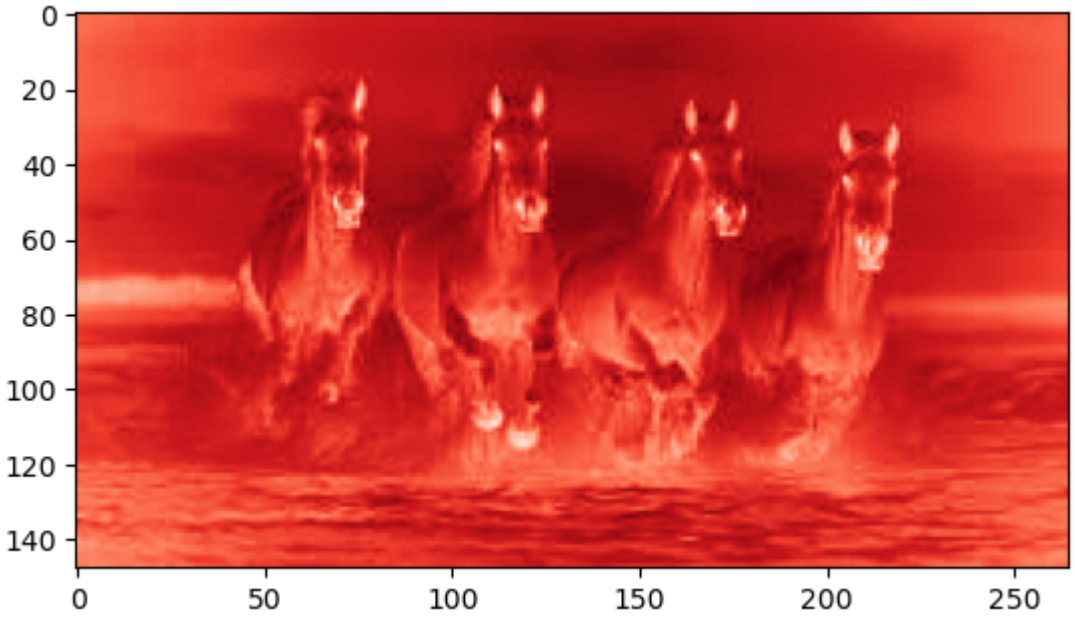
```
[[115 116 116 ... 135 135 133]
 [117 118 118 ... 135 134 133]
 [119 120 121 ... 134 134 133]
 ...
 [101 107 109 ... 103 101 103]
 [102 108 110 ... 111 111 110]
 [103 109 111 ... 120 121 120]]
```

In [31]:
```
plt.imshow(horse_red[:,:,0],cmap='gray')
plt.show()
```

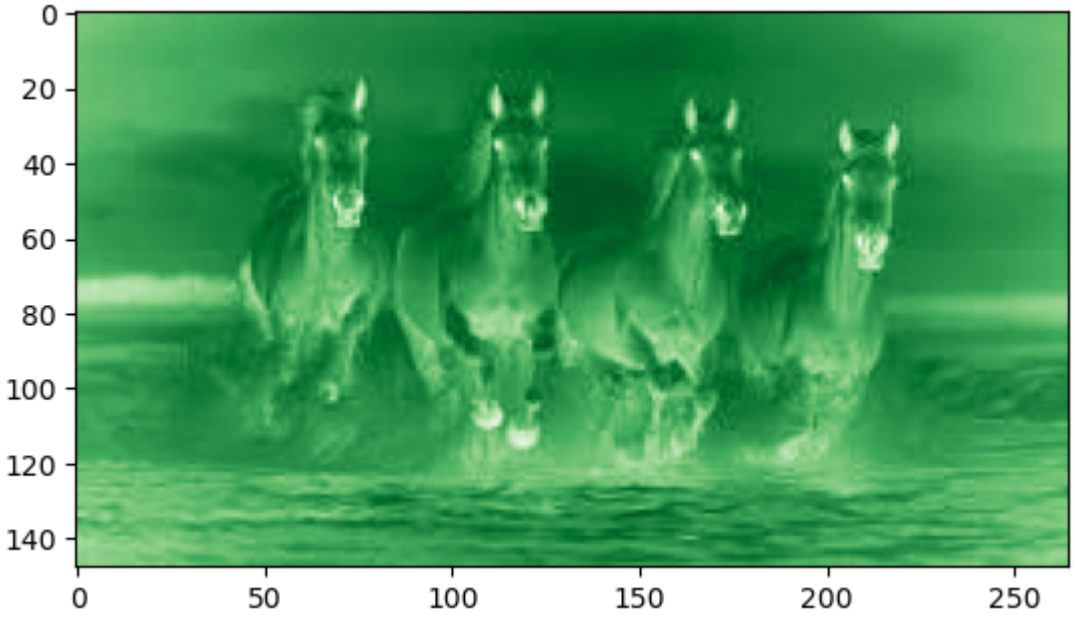
In [33]:
```
plt.imshow(horse_red[:,:,0],cmap='Blues')
plt.show()
```



In [34]:
```
plt.imshow(horse_red[:,:,0],cmap='Reds')
plt.show()
```



In [35]:
```
plt.imshow(horse_red[:,:,0],cmap='Greens')
plt.show()
```



In [37]:
```
plt.imshow(horse_red[:,:,0],cmap='Greys')
plt.show()
```

In [39]:
```
plt.imshow(horse_red[:,:,1],cmap='Greys')
plt.show()
```

In [40]:
```
plt.imshow(horse_red[:,:,-2],cmap='Greys')
plt.show()
```

In [41]:
```
horse_red[:,:,0]
```

Out[41]:
```
array([[115, 116, 116, ..., 135, 135, 133],
       [117, 118, 118, ..., 135, 134, 133],
       [119, 120, 121, ..., 134, 134, 133],
       ...,
       [101, 107, 109, ..., 103, 101, 103],
       [102, 108, 110, ..., 111, 111, 110],
       [103, 109, 111, ..., 120, 121, 120]], dtype=uint8)
```

In [42]:
```
horse_red[:,:,1]
```

Out[42]:
```
array([[134, 135, 135, ..., 153, 153, 151],
       [136, 137, 137, ..., 153, 152, 151],
       [138, 139, 140, ..., 152, 152, 151],
       ...,
       [111, 117, 119, ..., 114, 112, 114],
       [112, 118, 120, ..., 122, 122, 121],
       [113, 119, 121, ..., 131, 132, 131]], dtype=uint8)
```

In [43]:
```
horse_red[:,:,2]
```

Out[43]:
```
array([[140, 141, 141, ..., 157, 157, 155],
       [142, 143, 143, ..., 157, 156, 155],
       [144, 145, 146, ..., 156, 156, 155],
       ...,
       [110, 116, 118, ..., 118, 116, 118],
       [111, 117, 119, ..., 126, 126, 125],
       [112, 118, 120, ..., 135, 136, 135]], dtype=uint8)
```

In [45]:
```
horse_red[:,:,1]=0
print(horse_red[:,:,1])
```

```
[[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]]
```

In [46]:
```
plt.imshow(horse_red)
plt.show()
```

In [49]:
```
 plt.imshow(horse_red[:,:,0])
plt.show()
```

In [50]:
```
plt.imshow(horse_red)
plt.show()
```

In [51]:
```
print(horse_red)
```

```
[[[115   0 140]
  [116   0 141]
  [116   0 141]
  ...
  [135   0 157]
  [135   0 157]
  [133   0 155]]

 [[117   0 142]
  [118   0 143]
  [118   0 143]
  ...
  [135   0 157]
  [134   0 156]
  [133   0 155]]

 [[119   0 144]
  [120   0 145]
  [121   0 146]
  ...
  [134   0 156]
  [134   0 156]
  [133   0 155]]

 ...

 [[101   0 110]
  [107   0 116]
  [109   0 118]
  ...
  [103   0 118]
  [101   0 116]
  [103   0 118]]

 [[102   0 111]
  [108   0 117]
  [110   0 119]
  ...
  [111   0 126]
  [111   0 126]
  [110   0 125]]

 [[103   0 112]
  [109   0 118]
  [111   0 120]
  ...
  [120   0 135]
  [121   0 136]
  [120   0 135]]]
```

In [54]:
```
print(horse)
plt.imshow(horse)
plt.show()
```

```
<PIL.JpegImagePlugin.JpegImageFile image mode=RGB size=265x148 at 0x10CD62BA7B0>
```

In [56]:
```
arr1=np.asarray(horse)
arr1
```

Out[56]:
```
array([[[115, 134, 140],
        [116, 135, 141],
        [116, 135, 141],
        ...,
        [135, 153, 157],
        [135, 153, 157],
        [133, 151, 155]],

       [[117, 136, 142],
        [118, 137, 143],
        [118, 137, 143],
        ...,
        [135, 153, 157],
        [134, 152, 156],
        [133, 151, 155]],

       [[119, 138, 144],
        [120, 139, 145],
        [121, 140, 146],
        ...,
        [134, 152, 156],
        [134, 152, 156],
        [133, 151, 155]],

       ...,

       [[101, 111, 110],
        [107, 117, 116],
        [109, 119, 118],
        ...,
        [103, 114, 118],
        [101, 112, 116],
        [103, 114, 118]],

       [[102, 112, 111],
        [108, 118, 117],
        [110, 120, 119],
        ...,
        [111, 122, 126],
        [111, 122, 126],
        [110, 121, 125]],

       [[103, 113, 112],
        [109, 119, 118],
        [111, 121, 120],
        ...,
        [120, 131, 135],
        [121, 132, 136],
        [120, 131, 135]]], dtype=uint8)
```

In [57]:
```
type(arr1)
```

Out[57]:
```
numpy.ndarray
```

In [58]:
```
np.ndarray
arr1.shape
```

Out[58]:
```
(148, 265, 3)
```

In [71]:
```
arr1[:,:,0]=0
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
Cell In[71], line 1
----> 1 arr1[:,:,0]=0

ValueError: assignment destination is read-only
```

In [59]:
```
plt.imshow(arr1)
plt.show()
```

In [61]:
```
arr1[:,:,1]
```

Out[61]:
```
array([[134, 135, 135, ..., 153, 153, 151],
       [136, 137, 137, ..., 153, 152, 151],
       [138, 139, 140, ..., 152, 152, 151],
       ...,
       [111, 117, 119, ..., 114, 112, 114],
       [112, 118, 120, ..., 122, 122, 121],
       [113, 119, 121, ..., 131, 132, 131]], dtype=uint8)
```

In [70]:
```
horse[:,:,1] = 0
plt.imshow(horse)
plt.show()
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[70], line 1
----> 1 horse[:,:,1] = 0
      2 plt.imshow(horse)
      3 plt.show()

TypeError: 'JpegImageFile' object does not support item assignment
```

In [ ]: