In [2]:
```
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 [15]:
```
from PIL import Image # python imaging library
```

In [16]:
```
lion_img = Image.open("C:\Users\G BHARANIKA\Downloads\lion.jpg")
```

```
  Cell In[16], line 1
    lion_img = Image.open("C:\Users\G BHARANIKA\Downloads\lion.jpg")
                                                                   ^
SyntaxError: (unicode error) 'unicodeescape' codec can't decode bytes in position 2-
3: truncated \UXXXXXXXX escape
```

In [18]:
```
lion_img = Image.open(r"C:\Users\G BHARANIKA\Downloads\lion.jpg")
```

In [19]:
```
lion_img
```

Out[19]:

In [20]:
```
horse_img = Image.open("C:\Users\G BHARANIKA\Downloads\horse.jpg")
```

```
  Cell In[20], line 1
    horse_img = Image.open("C:\Users\G BHARANIKA\Downloads\horse.jpg")
                                                                    ^
SyntaxError: (unicode error) 'unicodeescape' codec can't decode bytes in position 2-3: truncated \UXXXXXXXX escape
```

In [21]:
```
horse_img = Image.open(r"C:\Users\G BHARANIKA\Downloads\horse.jpg")
```

In [22]:
```
horse_img
```

Out[22]:

In [23]:
```
horse_arr=np.asarray(horse_img)
horse_arr
```

Out[23]:
```
array([[[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       [[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       [[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       ...,

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]],

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]],

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]]], dtype=uint8)
```

In [24]:
```
type(horse_arr)
```

Out[24]:
```
numpy.ndarray
```

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

Out[25]: (1308, 736, 3)

In [38]:
```
plt.imshow(horse_arr)
```

Out[38]: <matplotlib.image.AxesImage at 0x1f452d93230>

In [27]:
```
horse_red = horse_arr.copy()
```

In [28]:
```
horse_red
```

Out[28]:
```
array([[[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       [[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       [[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       ...,

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]],

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]],

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]]], dtype=uint8)
```

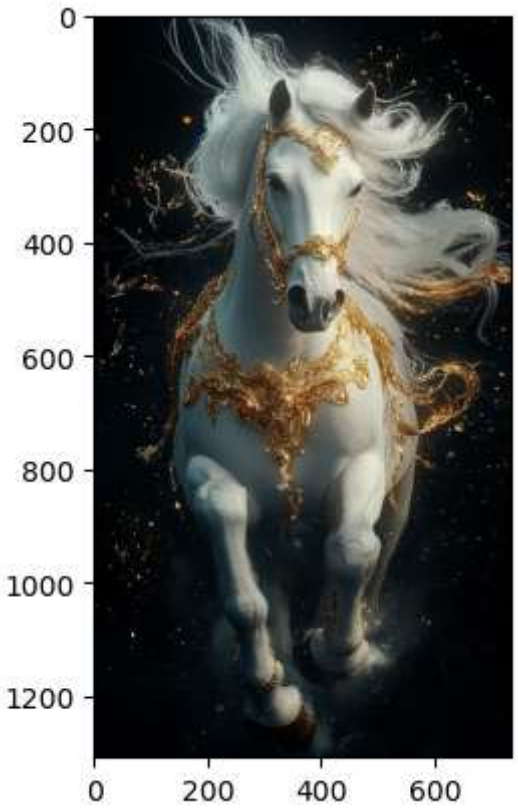
In [29]:
```
plt.imshow(horse_arr)
```

Out[29]:
```
<matplotlib.image.AxesImage at 0x1f452d38d70>
```

In [32]:
```
horse_arr == horse_red
```

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



In [33]:
```
horse_red=horse_arr.copy()
horse_red
```

Out[33]:
```
array([[[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       [[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       [[1, 2, 4],
        [1, 2, 4],
        [1, 2, 4],
        ...,
        [1, 3, 2],
        [2, 4, 3],
        [2, 4, 3]],

       ...,

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]],

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]],

       [[1, 2, 6],
        [1, 2, 6],
        [1, 2, 6],
        ...,
        [1, 2, 6],
        [1, 2, 6],
        [1, 2, 6]]], dtype=uint8)
```

In [34]:
```
horse_red==horse_arr
```

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 [39]:
```
horse_red.shape
```

Out[39]:
```
(1308, 736, 3)
```

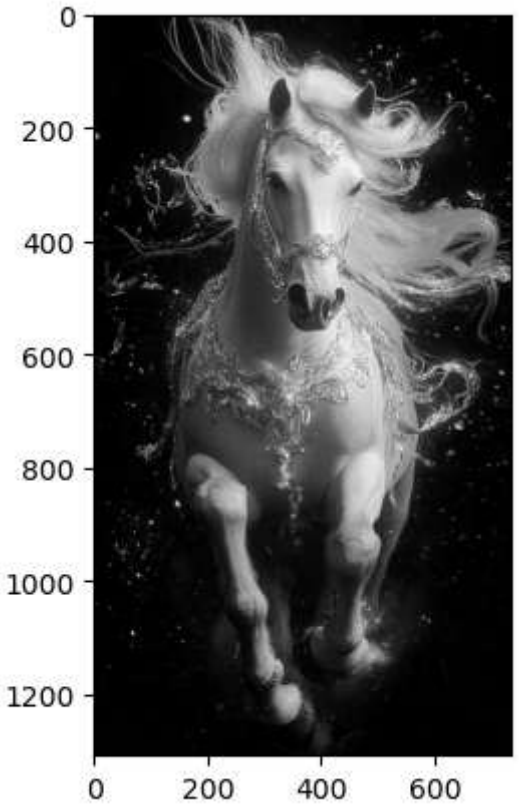
In [40]:
```
plt.imshow(horse_red[:,:,0])
```

Out[40]: <matplotlib.image.AxesImage at 0x1f452d65400>

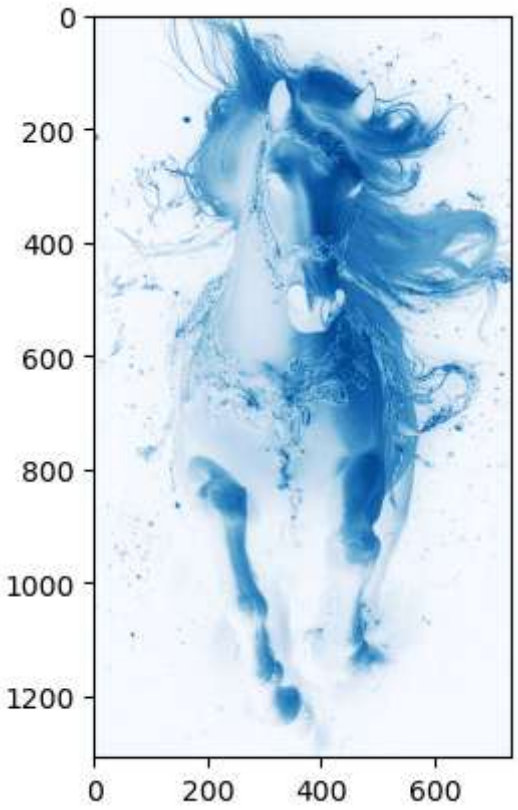
In [41]:
```
horse_red[:,:,0]
```

Out[41]:
```
array([[1, 1, 1, ..., 1, 2, 2],
       [1, 1, 1, ..., 1, 2, 2],
       [1, 1, 1, ..., 1, 2, 2],
       ...,
       [1, 1, 1, ..., 1, 1, 1],
       [1, 1, 1, ..., 1, 1, 1],
       [1, 1, 1, ..., 1, 1, 1]], dtype=uint8)
```

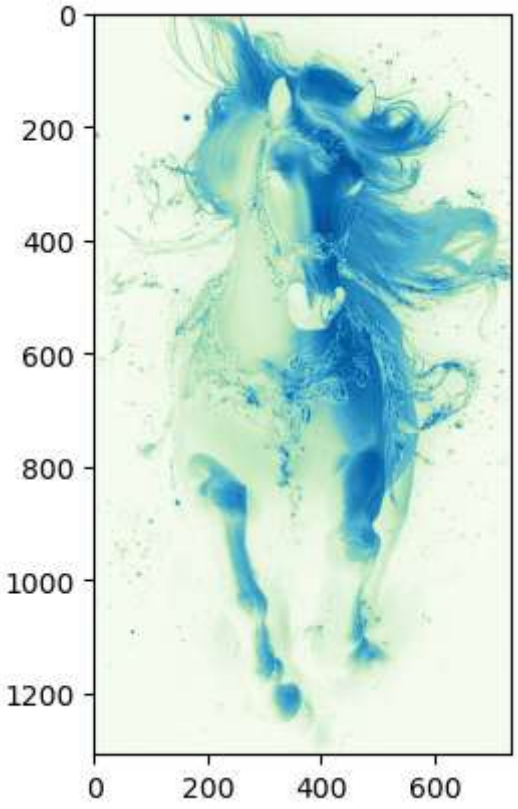
In [60]:
```
plt.imshow(horse_red[:,:,0],cmap='gray')
plt.show()
```



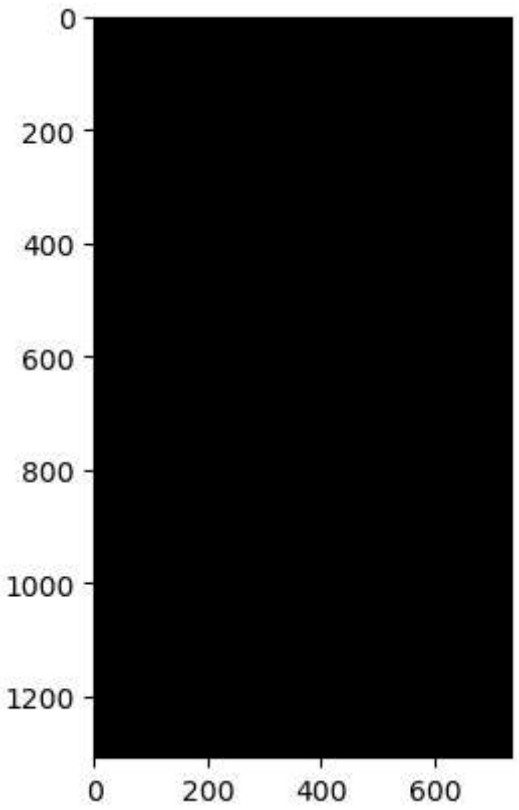
In [62]:
```
plt.imshow(horse_red[:,:,0],cmap='Blues')
plt.show()
```



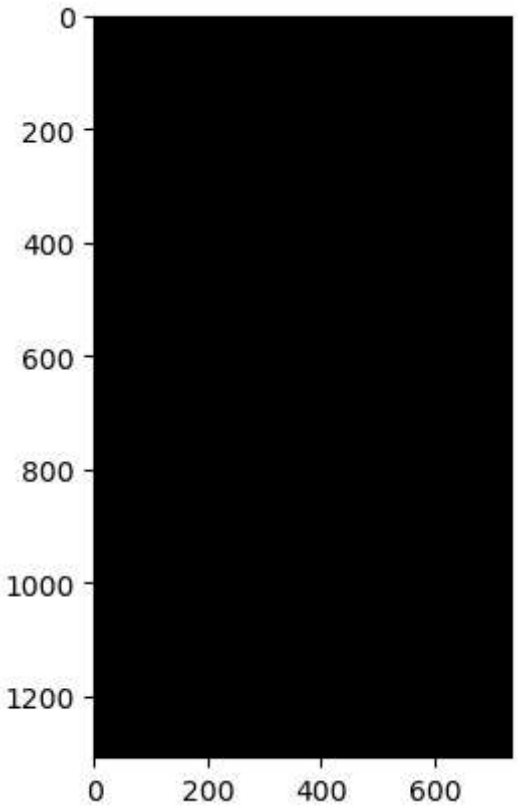
In [64]:
```
plt.imshow(horse_red[:,:,0],cmap='GnBu')
plt.show()
```



In [69]:
```
plt.imshow(horse_red[:,:,1],cmap='gray')
plt.show()
```



In [71]:
```
plt.imshow(horse_red[:,:,2],cmap='gray')
plt.show()
```



In [47]:
```
horse_red[:,:,0]
```

Out[47]:
```
array([[1, 1, 1, ..., 1, 2, 2],
       [1, 1, 1, ..., 1, 2, 2],
       [1, 1, 1, ..., 1, 2, 2],
       ...,
       [1, 1, 1, ..., 1, 1, 1],
       [1, 1, 1, ..., 1, 1, 1],
       [1, 1, 1, ..., 1, 1, 1]], dtype=uint8)
```

In [48]:
```
horse_red[:,:,1]
```

Out[48]:
```
array([[2, 2, 2, ..., 3, 4, 4],
       [2, 2, 2, ..., 3, 4, 4],
       [2, 2, 2, ..., 3, 4, 4],
       ...,
       [2, 2, 2, ..., 2, 2, 2],
       [2, 2, 2, ..., 2, 2, 2],
       [2, 2, 2, ..., 2, 2, 2]], dtype=uint8)
```

In [49]:
```
horse_red[:,:,2]
```

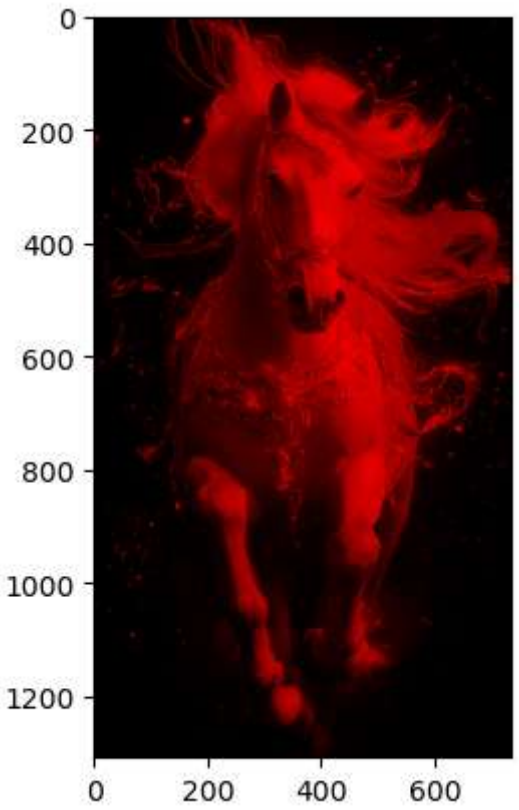
Out[49]:
```
array([[4, 4, 4, ..., 2, 3, 3],
       [4, 4, 4, ..., 2, 3, 3],
       [4, 4, 4, ..., 2, 3, 3],
       ...,
       [6, 6, 6, ..., 6, 6, 6],
       [6, 6, 6, ..., 6, 6, 6],
       [6, 6, 6, ..., 6, 6, 6]], dtype=uint8)
```

In [50]:
```
horse_red[:,:,1]=0
```

In [51]:
```
horse_red[:,:,1]
```

Out[51]:
```
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 [77]:
```
plt.imshow(horse_red)
plt.show()
```



In [53]:
```
horse_red[:,:,2]=0
```

In [54]:
```
horse_red[:,:,2]
```

Out[54]:
```
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 [79]:
```
horse_red
```

Out[79]:
```
array([[[1, 0, 0],
        [1, 0, 0],
        [1, 0, 0],
        ...,
        [1, 0, 0],
        [2, 0, 0],
        [2, 0, 0]],

       [[1, 0, 0],
        [1, 0, 0],
        [1, 0, 0],
        ...,
        [1, 0, 0],
        [2, 0, 0],
        [2, 0, 0]],

       [[1, 0, 0],
        [1, 0, 0],
        [1, 0, 0],
        ...,
        [1, 0, 0],
        [2, 0, 0],
        [2, 0, 0]],

       ...,

       [[1, 0, 0],
        [1, 0, 0],
        [1, 0, 0],
        ...,
        [1, 0, 0],
        [1, 0, 0],
        [1, 0, 0]],

       [[1, 0, 0],
        [1, 0, 0],
        [1, 0, 0],
        ...,
        [1, 0, 0],
        [1, 0, 0],
        [1, 0, 0]],

       [[1, 0, 0],
        [1, 0, 0],
        [1, 0, 0],
        ...,
        [1, 0, 0],
        [1, 0, 0],
        [1, 0, 0]]], dtype=uint8)
```

In [ ]: