

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

```
In [2]: ones_arr=np.ones((5,5))
```

```
In [3]: 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]: ones_arr=np.ones((5,5),dtype=int)
```

```
In [5]: ones_arr
```

```
Out[5]: 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 [6]: zeros_arr=np.zeros((3,3),dtype=int)
```

```
In [7]: zeros_arr
```

```
Out[7]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
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 [9]: zeros_arr
```

```
Out[9]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [10]: ones_arr
```

```
Out[10]: 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 [11]: import matplotlib.pyplot as plt
```

```
In [12]: %matplotlib inline
```

```
In [13]: from PIL import Image #python imaging library
```

```
In [14]: horse_img=Image.open(r"C:\Users\Sonu\OneDrive\Dokumen\horse.jpg")
```

```
In [15]: horse_img
```

Out[15]:



```
In [16]: type(horse_img)
```

Out[16]: PIL.JpegImagePlugin.JpegImageFile

```
In [17]: horse_arr=np.asarray(horse_img)  
horse_arr
```

```

Out[17]: array([[ 55,  64,  73],
                [ 56,  65,  74],
                [ 56,  65,  74],
                ...,
                [114,  40,   1],
                [114,  40,   1],
                [114,  40,   1]],

                [[ 55,  64,  73],
                 [ 56,  65,  74],
                 [ 56,  65,  74],
                 ...,
                 [113,  41,   1],
                 [114,  40,   1],
                 [114,  40,   1]],

                [[ 55,  64,  73],
                 [ 56,  65,  74],
                 [ 56,  65,  74],
                 ...,
                 [113,  41,   1],
                 [113,  41,   1],
                 [114,  40,   1]],

                ...,

                [[182, 156, 143],
                 [181, 155, 142],
                 [179, 153, 140],
                 ...,
                 [210, 165,  84],
                 [209, 164,  83],
                 [209, 164,  83]],

                [[184, 158, 145],
                 [182, 156, 143],
                 [180, 154, 141],
                 ...,
                 [218, 174,  85],
                 [217, 173,  84],
                 [216, 172,  83]],

                [[185, 158, 147],
                 [183, 156, 145],
                 [180, 153, 142],
                 ...,
                 [221, 181,  86],
                 [219, 179,  84],
                 [218, 178,  83]]], dtype=uint8)

```

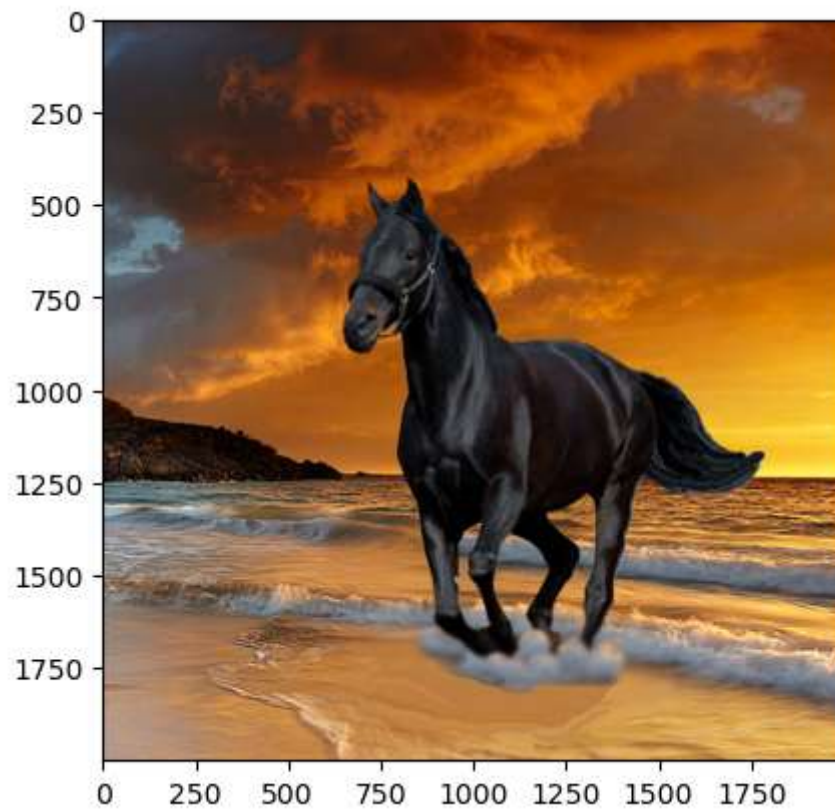
```
In [18]: type(horse_arr)
```

```
Out[18]: numpy.ndarray
```

```
In [19]: horse_arr.shape
```

Out[19]: (2000, 2000, 3)

```
In [21]: plt.imshow(horse_arr)  
plt.show()
```



```
In [22]: horse_red=horse_arr.copy()
```

```
In [23]: horse_red
```

```

Out[23]: array([[[ 55,  64,  73],
                  [ 56,  65,  74],
                  [ 56,  65,  74],
                  ...,
                  [114,  40,   1],
                  [114,  40,   1],
                  [114,  40,   1]],

                [[ 55,  64,  73],
                  [ 56,  65,  74],
                  [ 56,  65,  74],
                  ...,
                  [113,  41,   1],
                  [114,  40,   1],
                  [114,  40,   1]],

                [[ 55,  64,  73],
                  [ 56,  65,  74],
                  [ 56,  65,  74],
                  ...,
                  [113,  41,   1],
                  [113,  41,   1],
                  [114,  40,   1]],

                ...,

                [[182, 156, 143],
                  [181, 155, 142],
                  [179, 153, 140],
                  ...,
                  [210, 165,  84],
                  [209, 164,  83],
                  [209, 164,  83]],

                [[184, 158, 145],
                  [182, 156, 143],
                  [180, 154, 141],
                  ...,
                  [218, 174,  85],
                  [217, 173,  84],
                  [216, 172,  83]],

                [[185, 158, 147],
                  [183, 156, 145],
                  [180, 153, 142],
                  ...,
                  [221, 181,  86],
                  [219, 179,  84],
                  [218, 178,  83]]], dtype=uint8)

```

```
In [25]: horse_arr==horse_red
```

```

Out[25]: 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]],

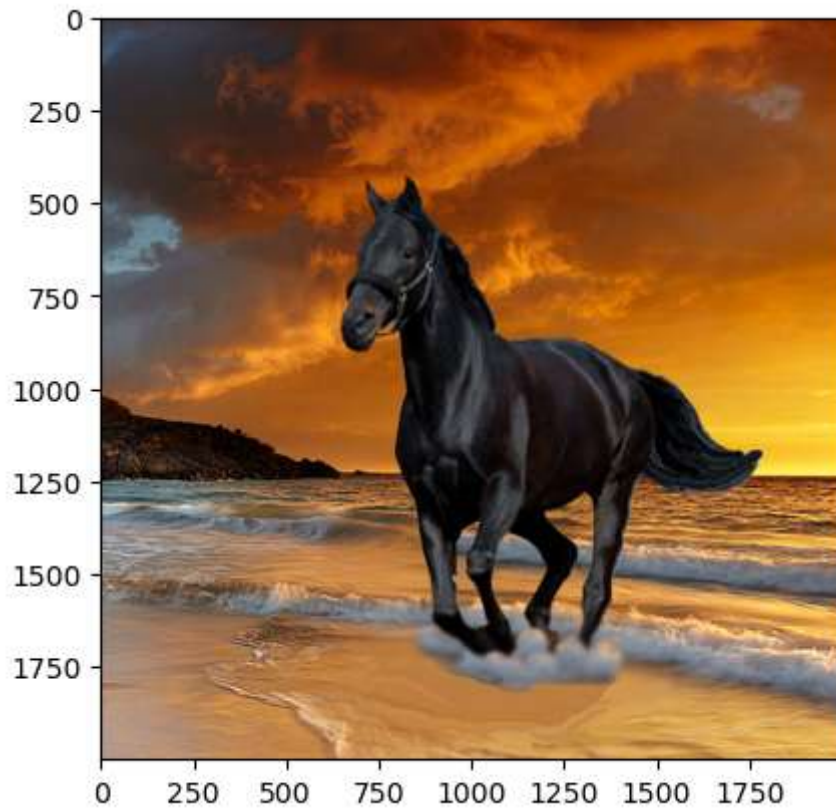
              [[ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True],
               ...,
               [ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True]]])

```

```

In [27]: plt.imshow(horse_red)
         plt.show()

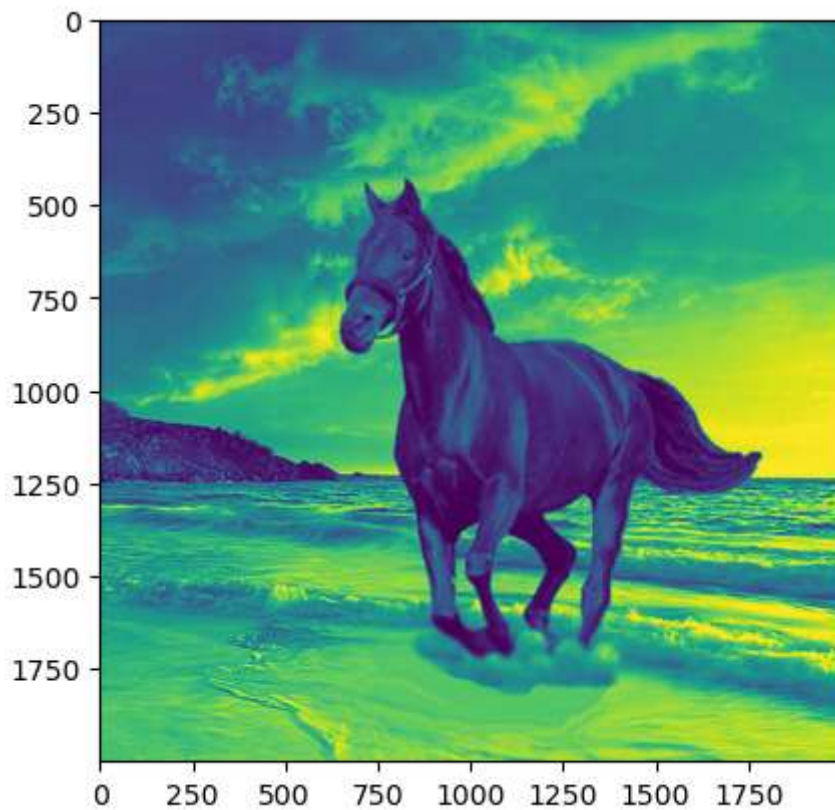
```



```
In [28]: horse_red.shape
```

```
Out[28]: (2000, 2000, 3)
```

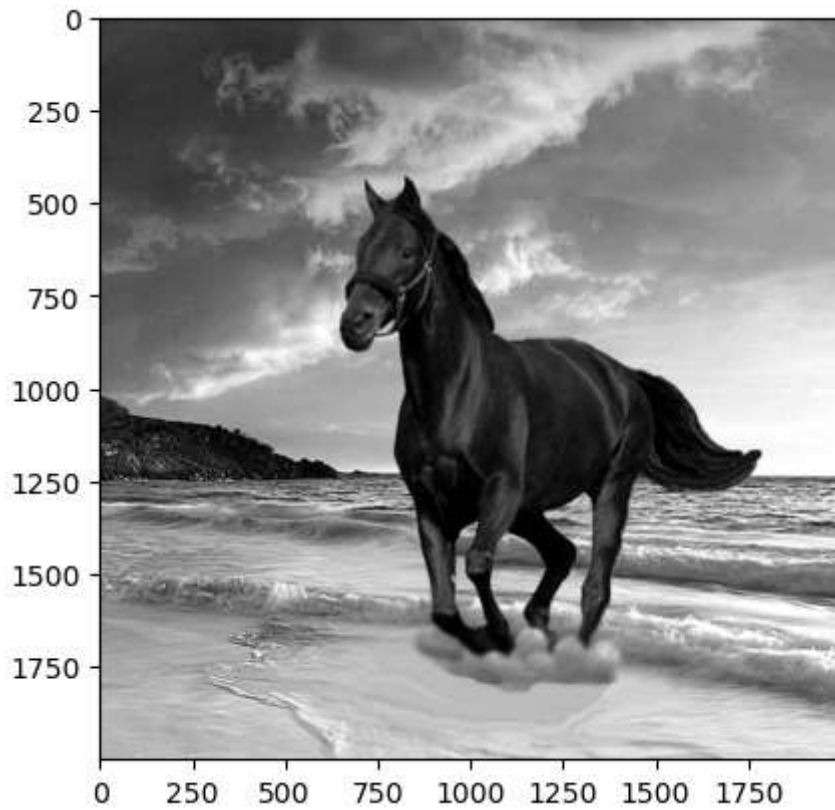
```
In [30]: plt.imshow(horse_red[:, :, 0]) # R G B  
plt.show()
```

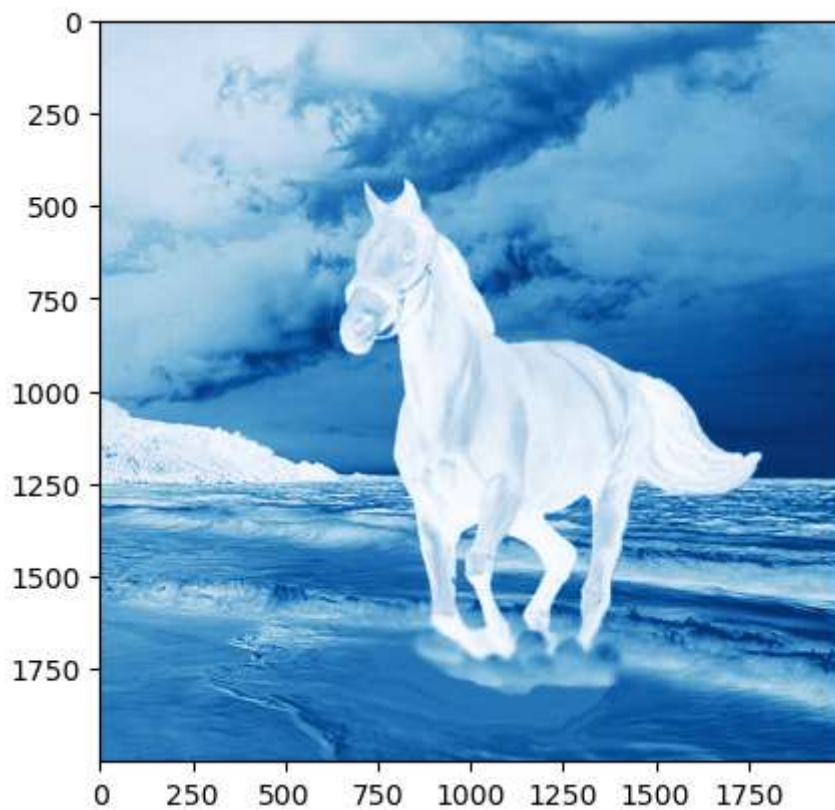
```
In [31]: horse_red[:, :, 0]
```

```
Out[31]: array([[ 55,  56,  56, ..., 114, 114, 114],
 [ 55,  56,  56, ..., 113, 114, 114],
 [ 55,  56,  56, ..., 113, 113, 114],
 ...,
 [182, 181, 179, ..., 210, 209, 209],
 [184, 182, 180, ..., 218, 217, 216],
 [185, 183, 180, ..., 221, 219, 218]], dtype=uint8)
```

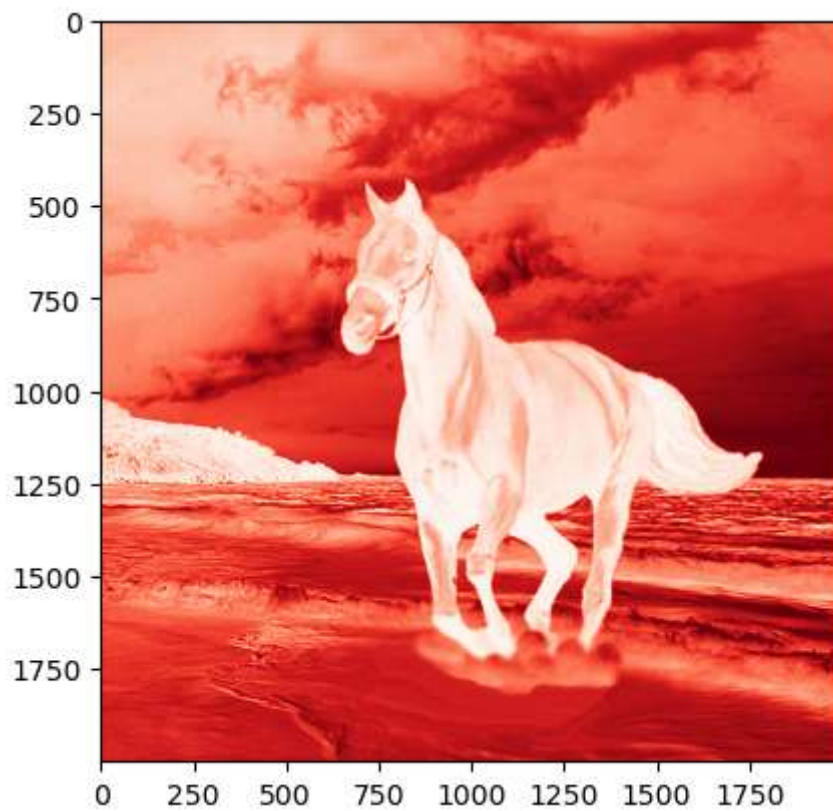
```
In [38]: plt.imshow(horse_red[:, :, 0], cmap='grey')
plt.show()
```

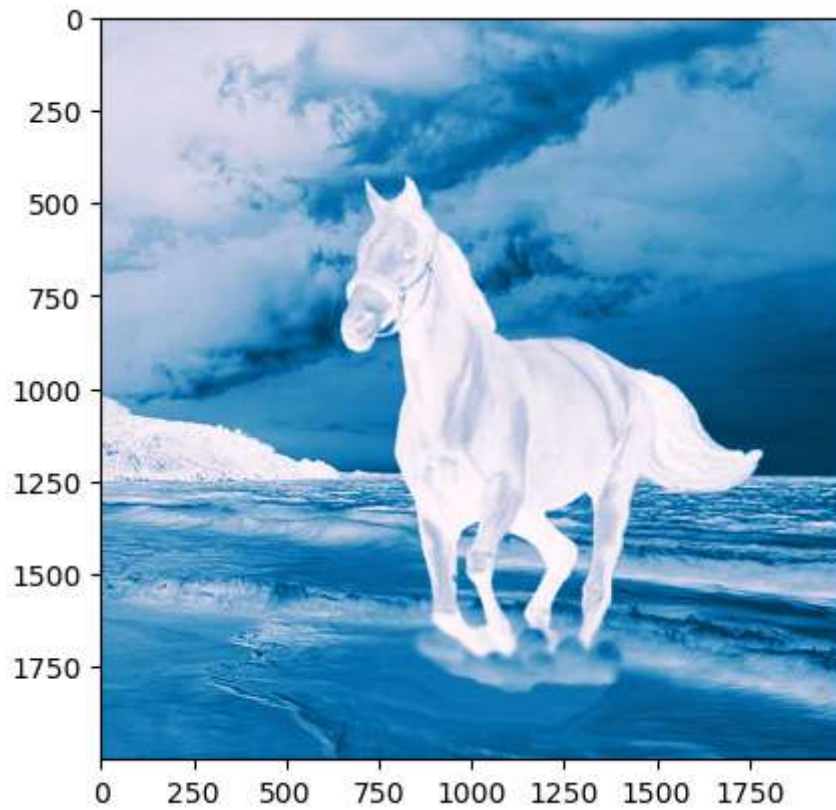
```
In [34]: plt.imshow(horse_red[:, :, 0], cmap='Blues')  
plt.show()
```



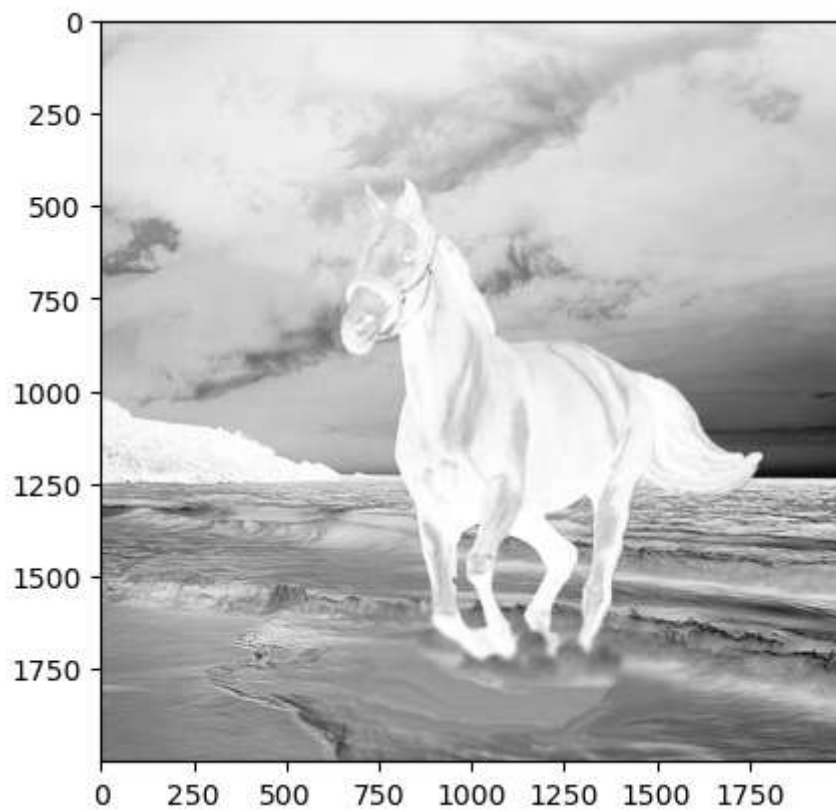
```
In [35]: plt.imshow(horse_red[:, :, 0], cmap='Reds')  
plt.show()
```



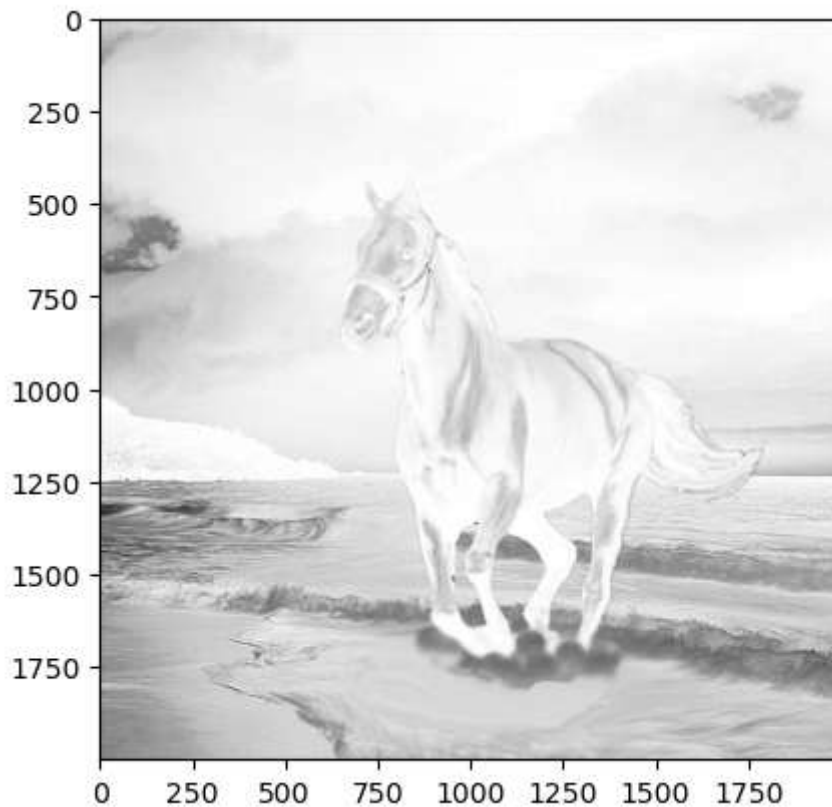
```
In [37]: plt.imshow(horse_red[:, :, 0], cmap='PuBu')  
plt.show()
```



```
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([[ 55,  56,  56, ..., 114, 114, 114],
 [ 55,  56,  56, ..., 113, 114, 114],
 [ 55,  56,  56, ..., 113, 113, 114],
 ...,
 [182, 181, 179, ..., 210, 209, 209],
 [184, 182, 180, ..., 218, 217, 216],
 [185, 183, 180, ..., 221, 219, 218]], dtype=uint8)
```

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

```
Out[42]: array([[ 64,  65,  65, ...,  40,  40,  40],
 [ 64,  65,  65, ...,  41,  40,  40],
 [ 64,  65,  65, ...,  41,  41,  40],
 ...,
 [156, 155, 153, ..., 165, 164, 164],
 [158, 156, 154, ..., 174, 173, 172],
 [158, 156, 153, ..., 181, 179, 178]], dtype=uint8)
```

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

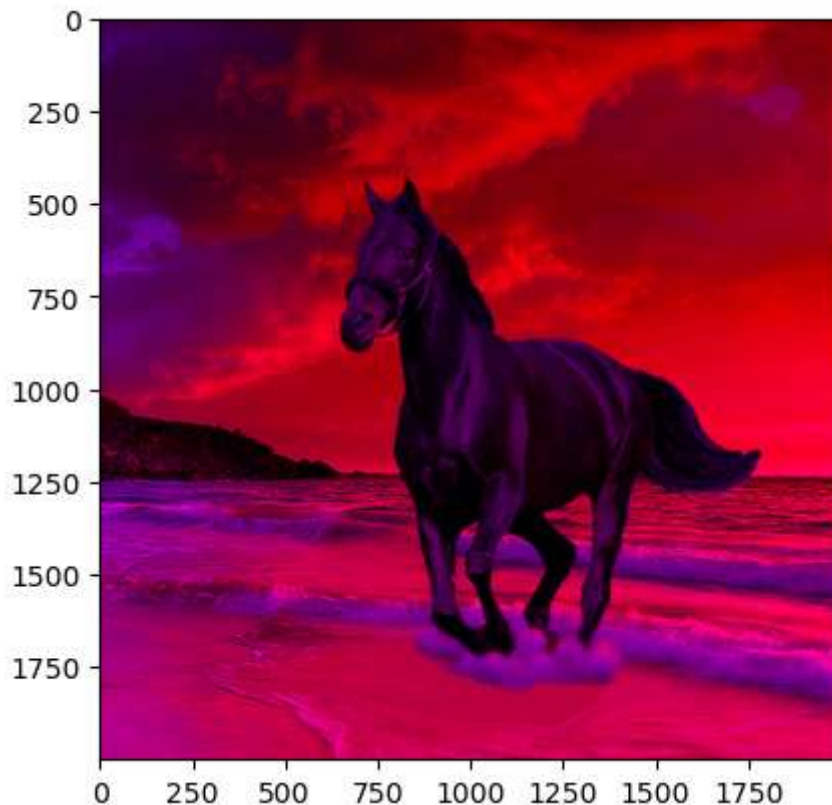
```
Out[43]: array([[ 73,  74,  74, ...,  1,  1,  1],
               [ 73,  74,  74, ...,  1,  1,  1],
               [ 73,  74,  74, ...,  1,  1,  1],
               ...,
               [143, 142, 140, ..., 84, 83, 83],
               [145, 143, 141, ..., 85, 84, 83],
               [147, 145, 142, ..., 86, 84, 83]], dtype=uint8)
```

```
In [45]: horse_red[:, :, 1] = 0
```

```
In [46]: horse_red[:, :, 1]
```

```
Out[46]: 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 [49]: plt.imshow(horse_red)
plt.show()
```



```
In [50]: horse_red[:, :, 2]
```



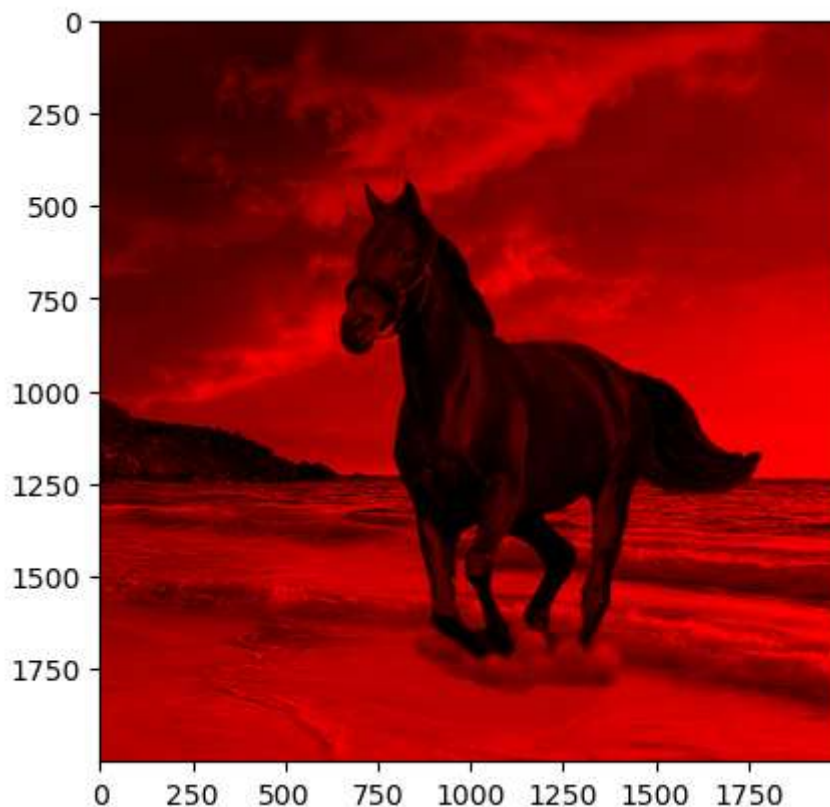
```
Out[50]: array([[ 73,  74,  74, ...,  1,  1,  1],
                [ 73,  74,  74, ...,  1,  1,  1],
                [ 73,  74,  74, ...,  1,  1,  1],
                ...,
                [143, 142, 140, ..., 84, 83, 83],
                [145, 143, 141, ..., 85, 84, 83],
                [147, 145, 142, ..., 86, 84, 83]], dtype=uint8)
```

```
In [51]: horse_red[:, :, 2]=0
```

```
In [52]: horse_red[:, :, 2]
```

```
Out[52]: 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 [53]: plt.imshow(horse_red)
plt.show()
```



```
In [54]: horse_arr
```

```

Out[54]: array([[[ 55,  0,  0],
                  [ 56,  0,  0],
                  [ 56,  0,  0],
                  ...,
                  [114,  0,  0],
                  [114,  0,  0],
                  [114,  0,  0]],

                [[ 55,  0,  0],
                  [ 56,  0,  0],
                  [ 56,  0,  0],
                  ...,
                  [113,  0,  0],
                  [114,  0,  0],
                  [114,  0,  0]],

                [[ 55,  0,  0],
                  [ 56,  0,  0],
                  [ 56,  0,  0],
                  ...,
                  [113,  0,  0],
                  [113,  0,  0],
                  [114,  0,  0]],

                ...,

                [[182,  0,  0],
                  [181,  0,  0],
                  [179,  0,  0],
                  ...,
                  [210,  0,  0],
                  [209,  0,  0],
                  [209,  0,  0]],

                [[184,  0,  0],
                  [182,  0,  0],
                  [180,  0,  0],
                  ...,
                  [218,  0,  0],
                  [217,  0,  0],
                  [216,  0,  0]],

                [[185,  0,  0],
                  [183,  0,  0],
                  [180,  0,  0],
                  ...,
                  [221,  0,  0],
                  [219,  0,  0],
                  [218,  0,  0]]], dtype=uint8)

```

```
In [55]: horse_red
```



```

Out[55]: array([[[ 55,  0,  0],
                  [ 56,  0,  0],
                  [ 56,  0,  0],
                  ...,
                  [114,  0,  0],
                  [114,  0,  0],
                  [114,  0,  0]],

                [[ 55,  0,  0],
                  [ 56,  0,  0],
                  [ 56,  0,  0],
                  ...,
                  [113,  0,  0],
                  [114,  0,  0],
                  [114,  0,  0]],

                [[ 55,  0,  0],
                  [ 56,  0,  0],
                  [ 56,  0,  0],
                  ...,
                  [113,  0,  0],
                  [113,  0,  0],
                  [114,  0,  0]],

                ...,

                [[182,  0,  0],
                  [181,  0,  0],
                  [179,  0,  0],
                  ...,
                  [210,  0,  0],
                  [209,  0,  0],
                  [209,  0,  0]],

                [[184,  0,  0],
                  [182,  0,  0],
                  [180,  0,  0],
                  ...,
                  [218,  0,  0],
                  [217,  0,  0],
                  [216,  0,  0]],

                [[185,  0,  0],
                  [183,  0,  0],
                  [180,  0,  0],
                  ...,
                  [221,  0,  0],
                  [219,  0,  0],
                  [218,  0,  0]]], dtype=uint8)

```

```
In [56]: horse_img
```

Out[56]:

In [57]: `arr1=np.asarray(horse_img)`In [58]: `arr1`

```

Out[58]: array([[[ 55,  64,  73],
                  [ 56,  65,  74],
                  [ 56,  65,  74],
                  ...,
                  [114,  40,   1],
                  [114,  40,   1],
                  [114,  40,   1]],

                [[ 55,  64,  73],
                  [ 56,  65,  74],
                  [ 56,  65,  74],
                  ...,
                  [113,  41,   1],
                  [114,  40,   1],
                  [114,  40,   1]],

                [[ 55,  64,  73],
                  [ 56,  65,  74],
                  [ 56,  65,  74],
                  ...,
                  [113,  41,   1],
                  [113,  41,   1],
                  [114,  40,   1]],

                ...,

                [[182, 156, 143],
                  [181, 155, 142],
                  [179, 153, 140],
                  ...,
                  [210, 165,  84],
                  [209, 164,  83],
                  [209, 164,  83]],

                [[184, 158, 145],
                  [182, 156, 143],
                  [180, 154, 141],
                  ...,
                  [218, 174,  85],
                  [217, 173,  84],
                  [216, 172,  83]],

                [[185, 158, 147],
                  [183, 156, 145],
                  [180, 153, 142],
                  ...,
                  [221, 181,  86],
                  [219, 179,  84],
                  [218, 178,  83]]], dtype=uint8)

```

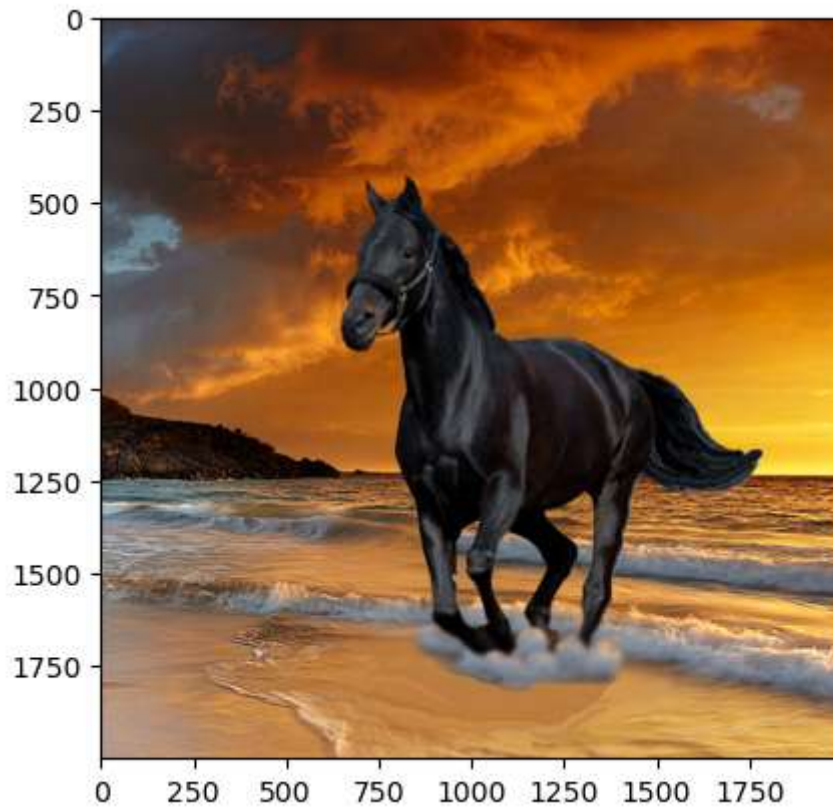
```
In [59]: type(arr1)
```

```
Out[59]: numpy.ndarray
```

```
In [60]: arr1.shape
```

Out[60]: (2000, 2000, 3)

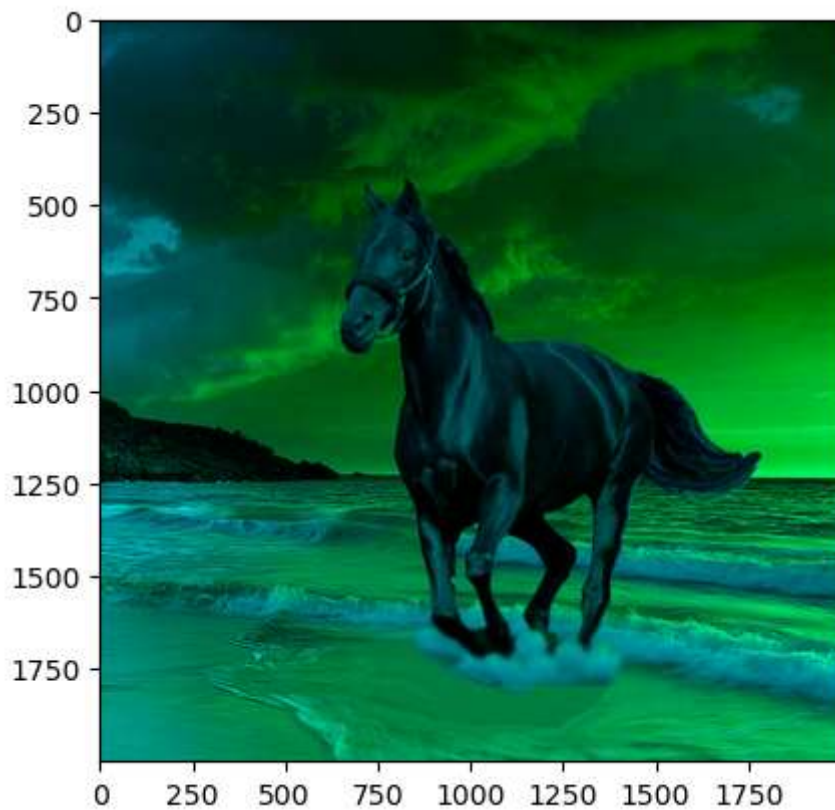
```
In [61]: plt.imshow(arr1)
plt.show()
```



```
In [62]: horse_img1=arr1.copy()
```

```
In [64]: horse_img1[:, :, 0]=0
```

```
In [65]: plt.imshow(horse_img1)
plt.show()
```

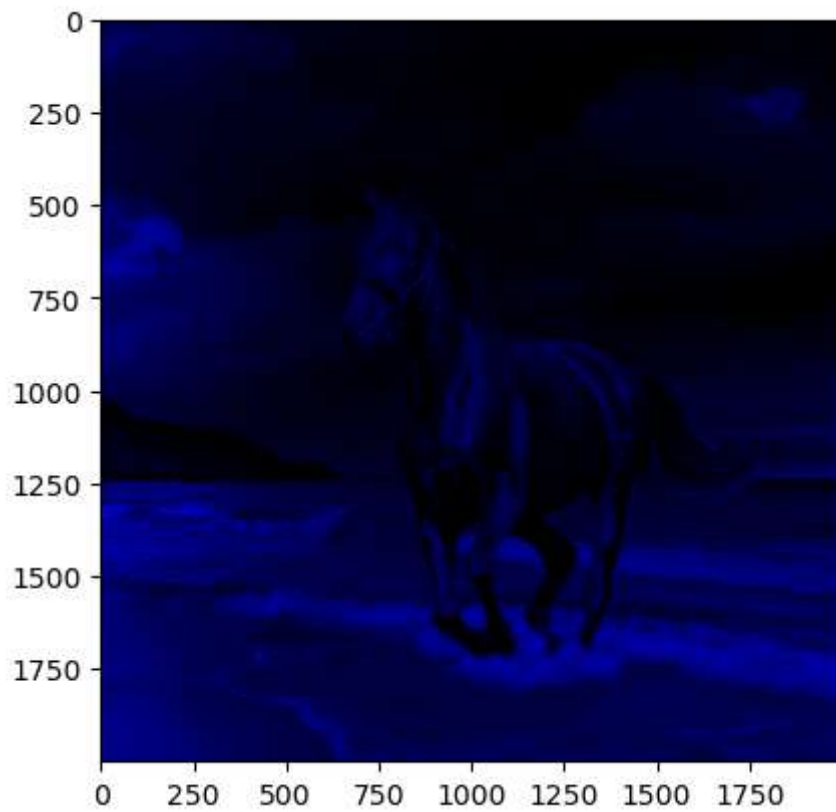


```
In [66]: horse_img1[:, :, 1]
```

```
Out[66]: array([[ 64,  65,  65, ...,  40,  40,  40],
                [ 64,  65,  65, ...,  41,  40,  40],
                [ 64,  65,  65, ...,  41,  41,  40],
                ...,
                [156, 155, 153, ..., 165, 164, 164],
                [158, 156, 154, ..., 174, 173, 172],
                [158, 156, 153, ..., 181, 179, 178]], dtype=uint8)
```

```
In [67]: horse_img1[:, :, 1]=0
```

```
In [68]: plt.imshow(horse_img1)
plt.show()
```



In []:

In []: