Lab1

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1 LAB 1 Assignment

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1.1 Importing Necessary Modules

[7]:
```
import numpy as np
import cv2
from PIL import Image
from PIL.ExifTags import TAGS
import matplotlib.pyplot as plt
```

1.2 Tasks

a. Reading image

b. Displaying image

c. Saving image

d. Find the image Information

e. Find the size of image

f. How to resize the image

g. How to convert the color image into gray scale image.

h. How to convert the color image into binary image.

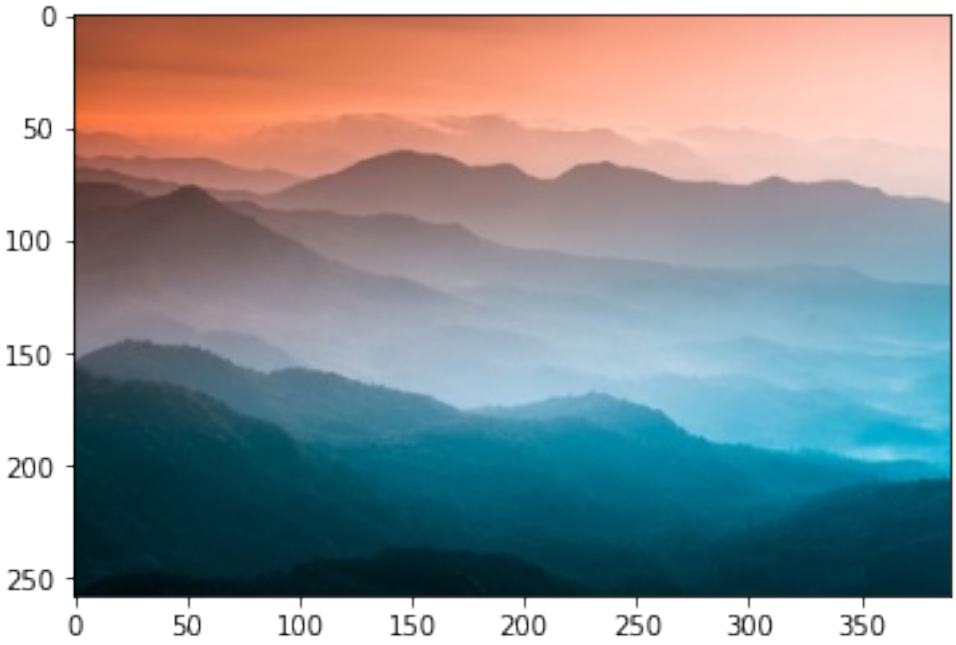
i. How to convert the gray scale image into binary image.

1.3 Task A: Reading Image

[8]:
```
img = cv2.imread('testImage.jpeg', cv2.IMREAD_UNCHANGED)
rgb_img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
```

1.4 Task B: Displaying Image

[9]:
```
plt.imshow(rgb_img)
plt.show()
```



1.5 Task C: Saving Image

[10]:
```
print('Directory before Saving the image:')
!ls
cv2.imwrite('testImage_copy.jpeg', rgb_img)
print('Directory after saving the image:')
!ls
```

```
Directory before Saving the image:
img.jpeg
Lab1.ipynb
testImage.jpeg
testImage_copy.jpeg
testImage_resized.jpeg
Directory after saving the image:
img.jpeg
```

```
Lab1.ipynb
testImage.jpeg
testImage_copy.jpeg
testImage_resized.jpeg
```

1.6 Task D: Finding Image Information

[11]:
```
image1 = Image.open('img.jpeg')
exifData = image1.getexif()
for tagid in exifData:
    tagname = TAGS.get(tagid, tagid)
    value = exifData.get(tagid)
    print(tagname, ': ', value)
```

```
GPSInfo :  978
ResolutionUnit :  2
ExifOffset :  214
Make :  Canon
Model :  Canon EOS 40D
Software :  GIMP 2.4.5
Orientation :  1
DateTime :  2008:07:31 10:38:11
YCbCrPositioning :  2
XResolution :  72.0
YResolution :  72.0
```

1.7 Task E: Find the size of the Image

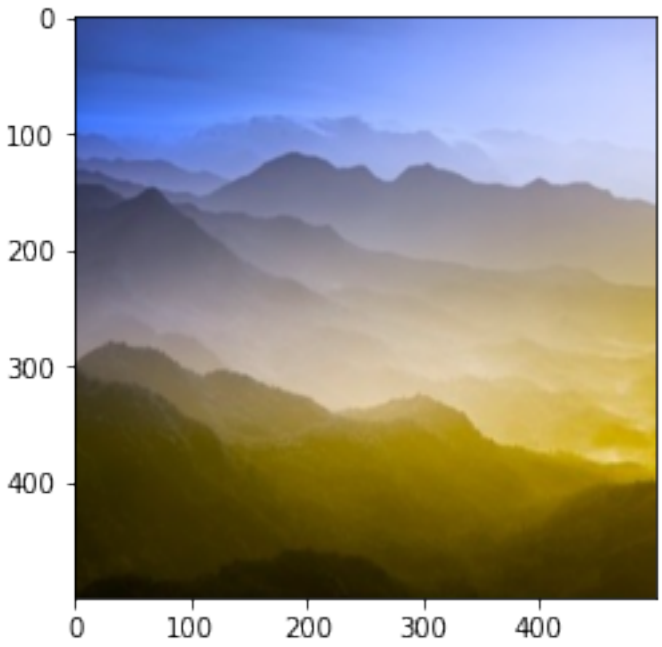
[12]:
```
dimensions = img.shape
print('Dimensions: ', dimensions)
print('Height: ', dimensions[0])
print('Width: ', dimensions[1])
print('Channels: ', dimensions[2])
```

```
Dimensions:  (258, 390, 3)
Height:  258
Width:  390
Channels:  3
```

1.8 Task F: Resizing an Image

[13]:
```
resized_image = cv2.resize(img,(500,500));
cv2.imwrite('testImage_resized.jpeg', img)
print('Resized Image')
plt.imshow(resized_image)
plt.show()
```

```
Resized Image
```

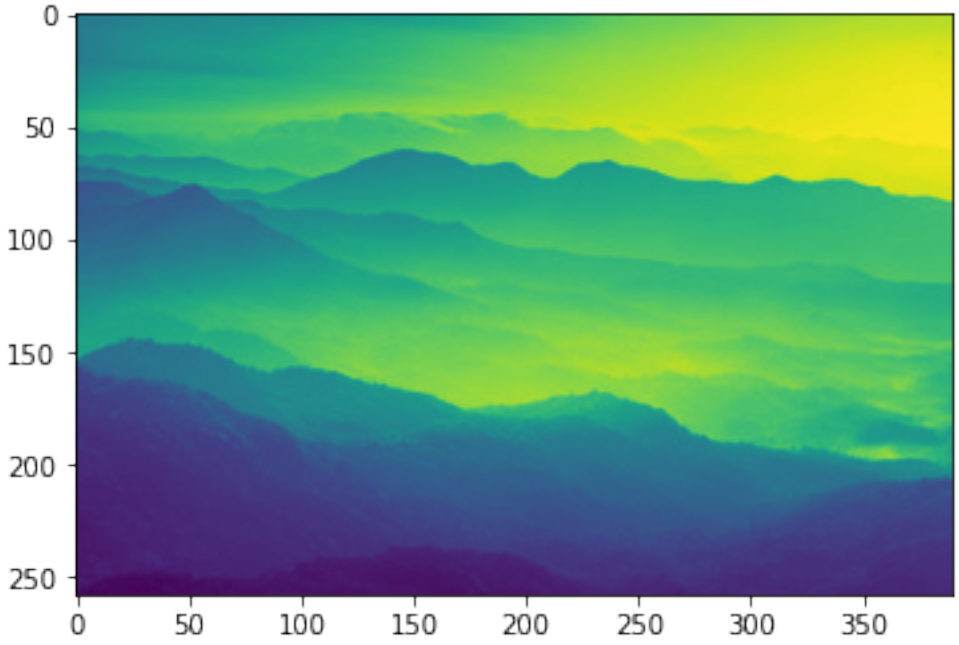


1.9 Task G: How to convert the color image into gray scale image.

[14]:
```
grayscaleImage = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
print('Original Image')
plt.imshow(img)
plt.show()
print('Grayscale Image')
plt.imshow(grayscaleImage)
plt.show()
```

```
Original Image
```

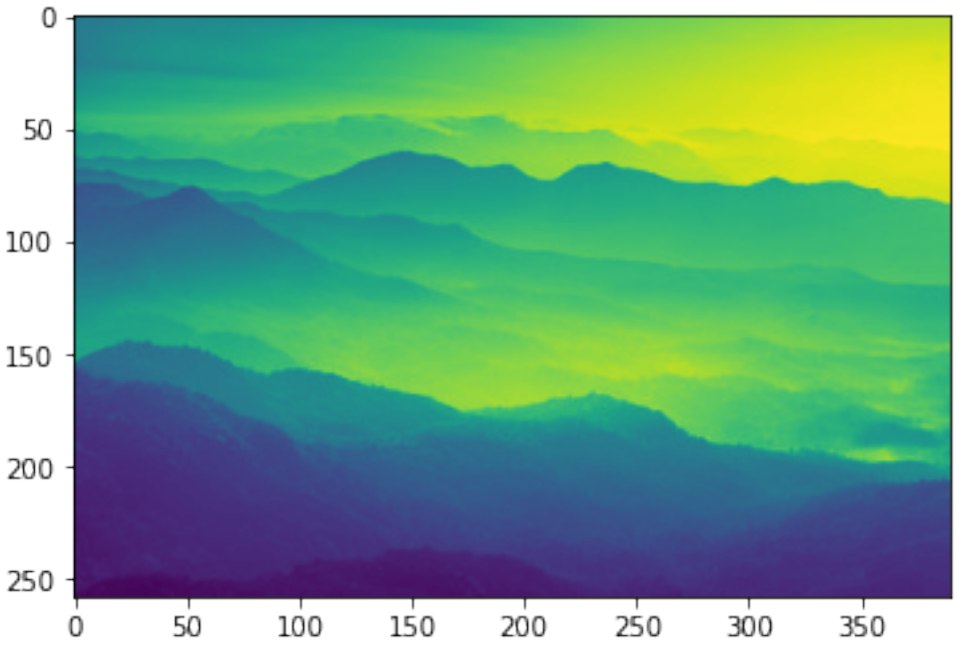
Grayscale Image



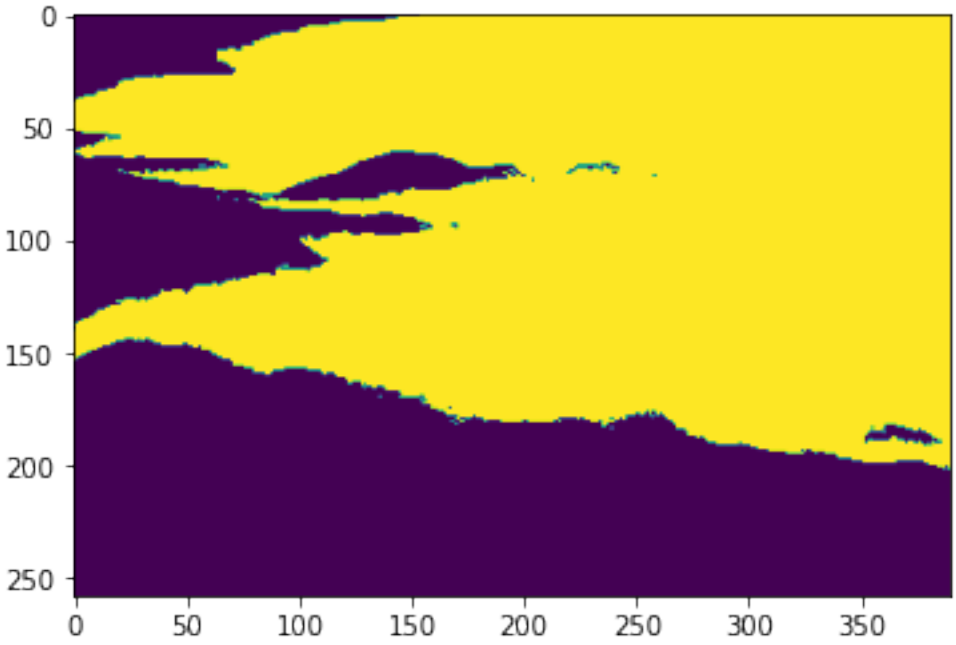
1.10 Task H: Converting Grayscale Image to binary

[15]:
```
(thresh,blackAndWhiteImage) = cv2.threshold(grayscaleImage,127,255,cv2.
↪THRESH_BINARY);
print('Grayscale Image')
plt.imshow(grayscaleImage)
plt.show()
print('Binary Image')
plt.imshow(blackAndWhiteImage)
plt.show()
```

```
Grayscale Image
```




```
Binary Image
```

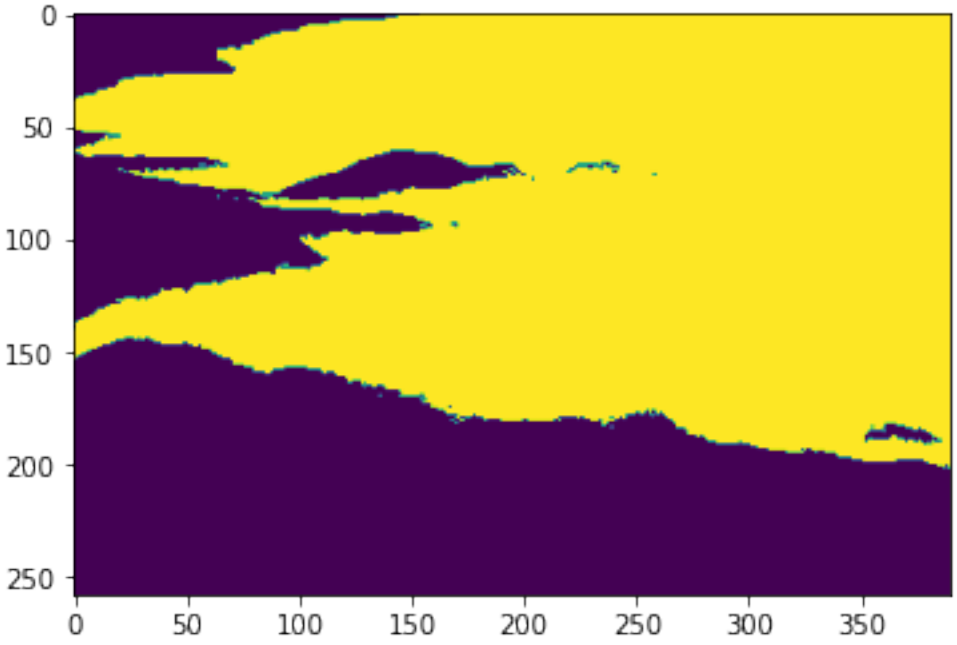


1.11 Task I: How to convert the gray scale image into binary image.

[16]:
```
print('Original Image')
plt.imshow(img)
plt.show()
print('Binary Image')
plt.imshow(blackAndWhiteImage)
plt.show()
```

```
Original Image
```

Binary Image



[ ]: