5)Write a Python function to analyze the histogram of the given input image based on color levels using Open CV.

PROGRAM:

```
import cv2
import numpy as np
import matplotlib.pyplot as plt
def analyze_histogram(image_path):
    image = cv2.imread(image_path)
    color_channels = ('b', 'g', 'r')
    plt.figure(figsize=(10, 5))
    for i, color in enumerate(color_channels):
        histogram = cv2.calcHist([image], [i], None, [256], [0, 256])
        plt.plot(histogram, color=color, label=f"{color.upper()} Channel")
    plt.xlim([0, 256])  # Pixel intensity range
    plt.title("Color Histogram Analysis")
    plt.xlabel("Pixel Intensity")
    plt.ylabel("Frequency")
    plt.legend()
    plt.show()
# Call the function with the path to your image
analyze_histogram(r"C:\Users\harik\Downloads\CV LAB\MOUNTAIN.jpeg")  # Replace with your image file
```

OUTPUT:

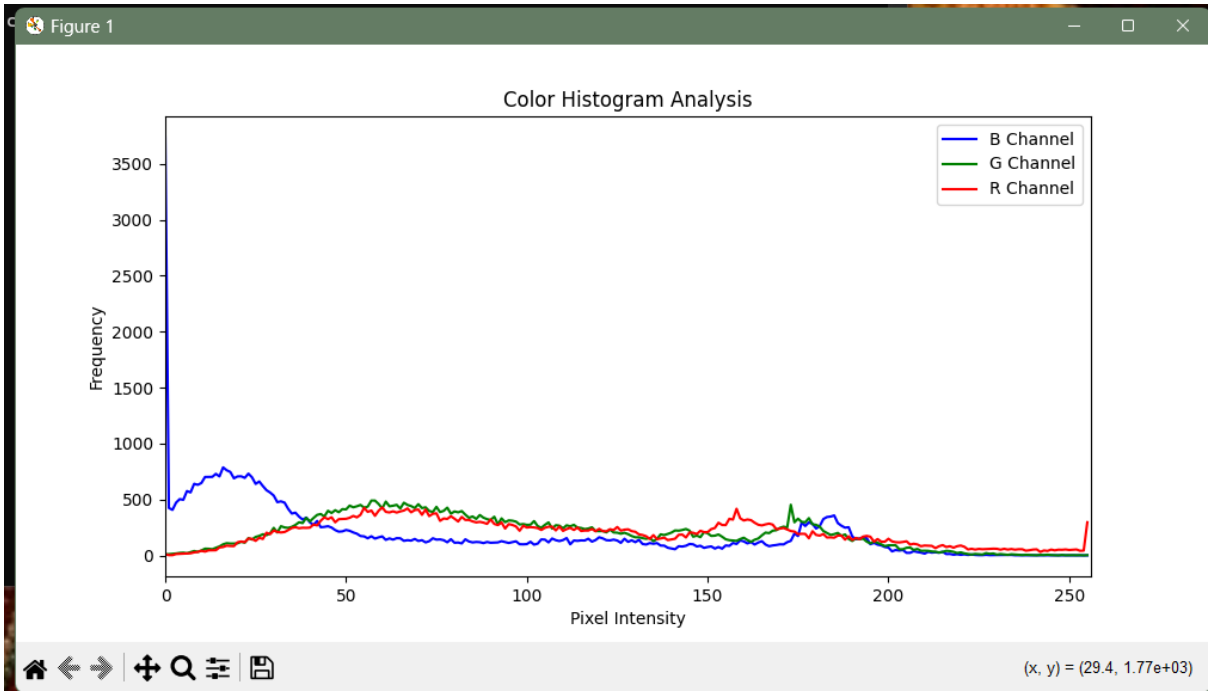
Figure 1
Color Histogram Analysis
B Channel
G Channel
R Channel
Frequency
Pixel Intensity
0
500
1000
1500
2000
2500
3000
3500
0
50
100
150
200
250
(x, y) = (29.4, 1.77e+03)