HACKATHON OUTPUT

Data loading

```
import pandas as pd

try:
    df = pd.read_csv('RGB_colors.csv')
    display(df.head())
except FileNotFoundError:
    print("Error: 'RGB_colors.csv' not found.")
    df = None
except pd.errors.ParserError:
    print("Error: Could not parse the CSV file. Please check its format.")
    df = None
except Exception as e:
    print(f"An unexpected error occurred: {e}")
    df = None
```

Data exploration

```
print("Shape of the DataFrame:", df.shape)

# Check data types
print("\nData Types:\n", df.dtypes)

# Identify missing values
print("\nMissing Values per column:\n", df.isnull().sum())

# Analyze distribution of RGB values
print("\nDescriptive Statistics for RGB values:\n", df[['196', '98', '16']].describe())

# Correlation check
print("\nCorrelation between RGB values:\n", df[['196', '98', '16']].corr())
```

Data visualization

```
import matplotlib.pyplot as plt

# Histograms for each RGB component
plt.figure(figsize=(15, 5))

plt.subplot(1, 3, 1)
plt.hist(df['196'], bins=20, color='red', alpha=0.7)
plt.xlabel('R Value')
plt.ylabel('Frequency')
plt.title('Distribution of R values')

plt.subplot(1, 3, 2)
plt.hist(df['98'], bins=20, color='green', alpha=0.7)
plt.xlabel('G Value')
plt.ylabel('Frequency')
plt.title('Distribution of G values')
```

```
plt.subplot(1, 3, 3)
plt.hist(df['16'], bins=20, color='blue', alpha=0.7)
plt.xlabel('B Value')
plt.ylabel('Frequency')
plt.title('Distribution of B values')

plt.tight_layout()
plt.show()
```

```
# Scatter plot matrix
from pandas.plotting import scatter_matrix
plt.figure(figsize=(10, 10))
scatter_matrix(df[['196', '98', '16']], alpha=0.8, figsize=(10, 10), diagonal='hist')
plt.show()
```

Data Overview

- **DATA TYPES**

```
alloy_orange     object
Alloy Orange     object
#c46210          object
196              int64
98               int64
16               int64
r                object
```

- **MISSING VALUES**

```
alloy_orange     0
Alloy Orange     0
#c46210          0
196              0
98               0
16               0
r                0
```

Detected RGB Columns

📈 **Descriptive Statistics:**

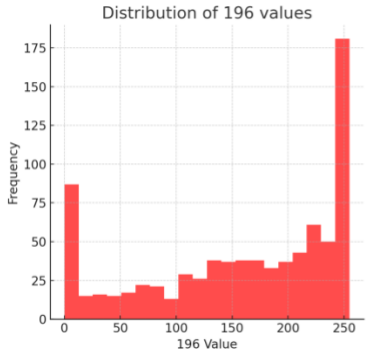
	196 (R)	98 (G)	16 (B)
Count	817.0	817.0	817.0
Mean	158.9	125.7	120.9
Std	85.1	76.1	78.1
Min	0.0	0.0	0.0
25%	101.0	65.0	55.0
50%	177.0	125.0	120.0
75%	237.0	191.0	189.0
Max	255.0	255.0	255.0

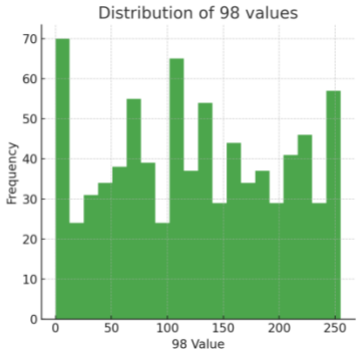
Correlation Between RGB Channels

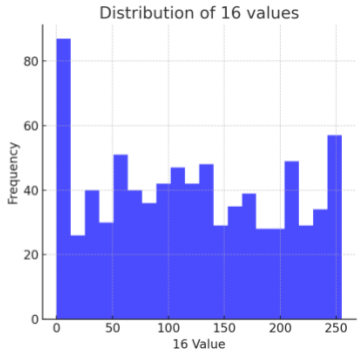
Correlation Between RGB Channels:

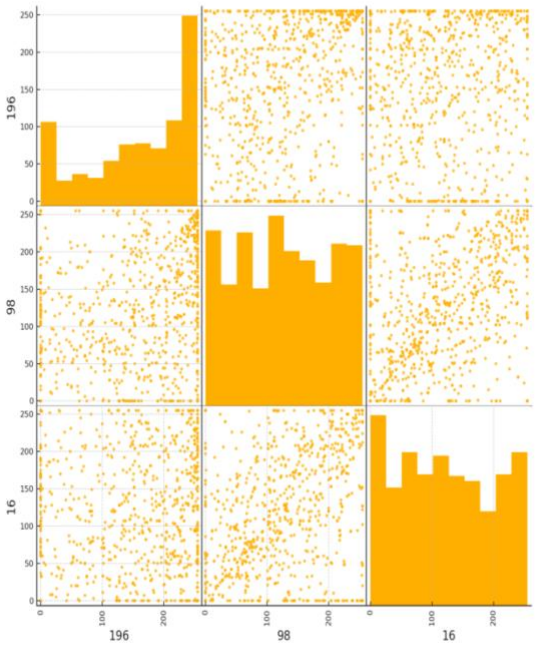
	196 (R)	98 (G)	16 (B)
196	1.00	0.25	0.01
98	0.25	1.00	0.30
16	0.01	0.30	1.00

Visual Outputs








196
98
16
0
50
100
150
200
250