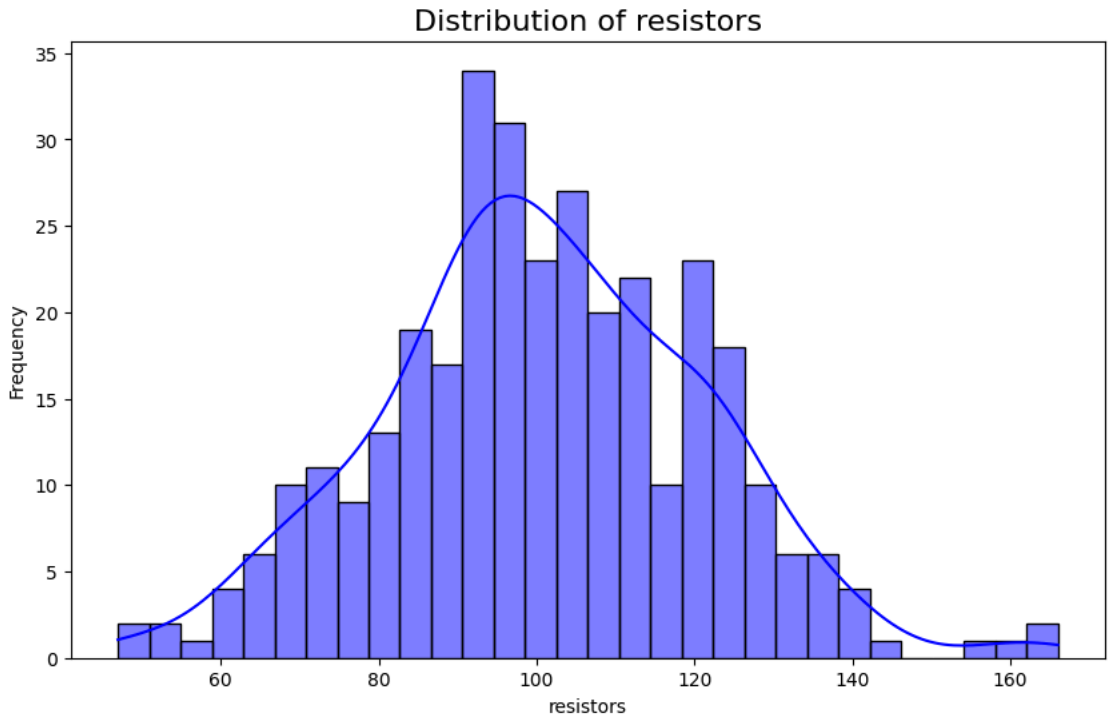
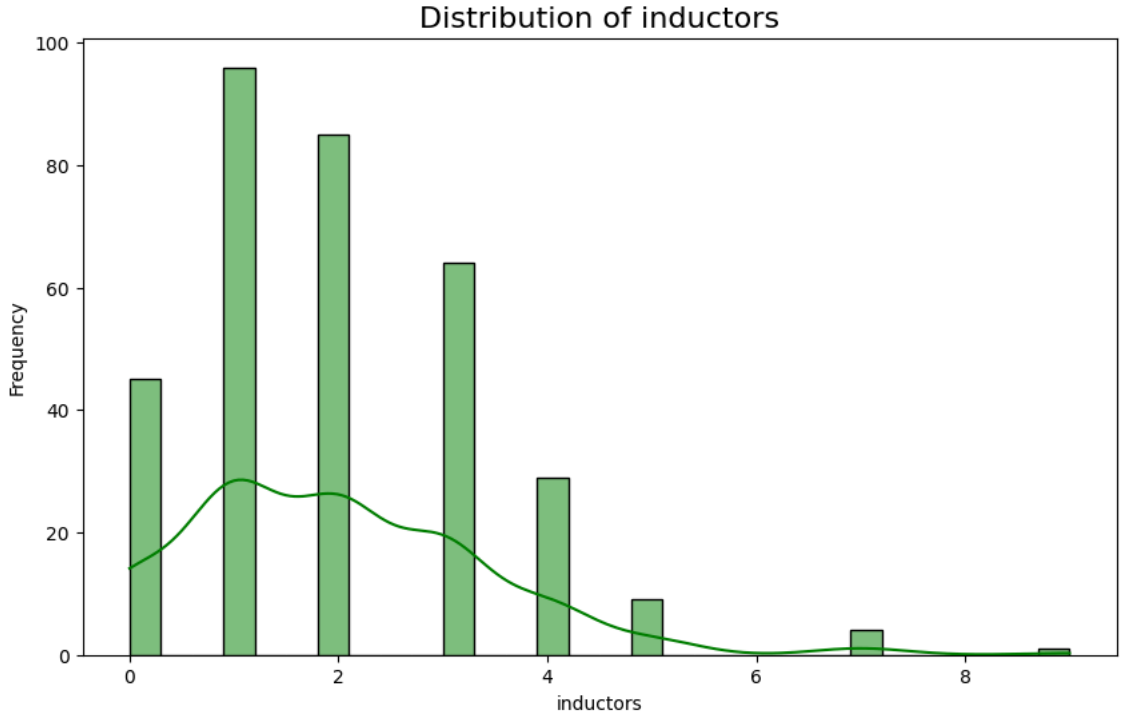
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from scipy.stats import shapiro, normaltest, anderson


data = pd.read_csv('/content/sku_distributions.csv')


print("Dataset preview:")
print(data.head())
```

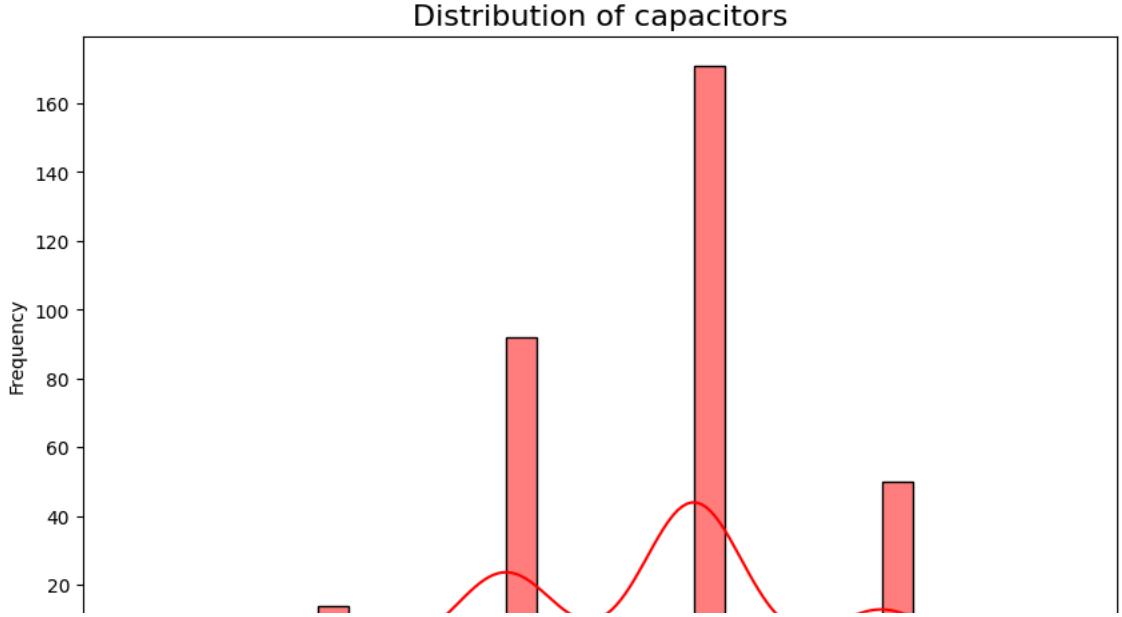
```
Dataset preview:
   day  inductors  capacitors  resistors  Unnamed: 4 Unnamed: 5 Unnamed: 6  \
0    1          0          10         96         NaN        NaN        NaN
1    2          3          10         92         NaN        NaN        NaN
2    3          1           9         84         NaN        NaN        NaN
3    4          2          10        113         NaN        NaN        NaN
4    5          1          10         65         NaN        NaN        NaN

  Unnamed: 7 Unnamed: 8 Unnamed: 9 Unnamed: 10
0        NaN        NaN        NaN         NaN
1        NaN        NaN        NaN         NaN
2        NaN        NaN        NaN         NaN
3        NaN        NaN        NaN         NaN
4        NaN        NaN        NaN         NaN
```

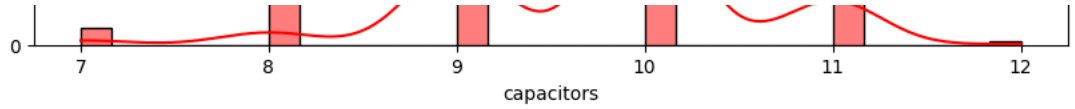
```
Resistors = data['resistors']
inductors = data['inductors']
capacitors = data['capacitors']

# Function to plot histograms and KDE
def plot_distributions(data, title, color):
    plt.figure(figsize=(10, 6))
    sns.histplot(data, kde=True, color=color, bins=30)
    plt.title(f'Distribution of {title}', fontsize=16)
    plt.xlabel(title)
    plt.ylabel('Frequency')
    plt.show()


plot_distributions(Resistors, "resistors", "blue")
plot_distributions(inductors, "inductors", "green")
plot_distributions(capacitors, "capacitors", "red")
```

[+]


Distribution of resistors
Frequency
resistors
0
5
10
15
20
25
30
35
60
80
100
120
140
160


Distribution of inductors
Frequency
inductors
0
20
40
60
80
100
0
2
4
6
8


Distribution of capacitors
Frequency
20
40
60
80
100
120
140
160




```
def normality_tests(data, label):
    print(f"\nNormality Tests for {label}:\n")

    # Shapiro-Wilk Test
    stat, p = shapiro(data)
    print(f"Shapiro-Wilk Test: Statistic = {stat:.4f}, p-value = {p:.4f}")
    if p > 0.05:
        print("The data is likely normal (fail to reject H0).")
    else:
        print("The data is not normal (reject H0).")

    # D'Agostino's K-squared Test
    stat, p = normaltest(data)
    print(f"D'Agostino's K-squared Test: Statistic = {stat:.4f}, p-value = {p:.4f}")
    if p > 0.05:
        print("The data is likely normal (fail to reject H0).")
    else:
        print("The data is not normal (reject H0).")

    # Anderson-Darling Test
    result = anderson(data)
    print("Anderson-Darling Test:")
    print(f"Statistic: {result.statistic:.4f}")
    for i, (sl, cv) in enumerate(zip(result.significance_level, result.critical_values)):
        if result.statistic < cv:
            print(f"Significance level {sl}%: {cv:.4f} (Fail to reject H0)")
        else:
            print(f"Significance level {sl}%: {cv:.4f} (Reject H0)")

# Perform normality tests
normality_tests(Resistors, "resistors")
normality_tests(inductors, "inductors")
normality_tests(capacitors, "capacitors")
```

```
Normality Tests for resistors:

Shapiro-Wilk Test: Statistic = 0.9948, p-value = 0.3220
The data is likely normal (fail to reject H0).
D'Agostino's K-squared Test: Statistic = 1.5714, p-value = 0.4558
The data is likely normal (fail to reject H0).
Anderson-Darling Test:
Statistic: 0.3894
Significance level 15.0%: 0.5690 (Fail to reject H0)
Significance level 10.0%: 0.6480 (Fail to reject H0)
Significance level 5.0%: 0.7780 (Fail to reject H0)
Significance level 2.5%: 0.9070 (Fail to reject H0)
Significance level 1.0%: 1.0790 (Fail to reject H0)

Normality Tests for inductors:

Shapiro-Wilk Test: Statistic = 0.9008, p-value = 0.0000
The data is not normal (reject H0).
D'Agostino's K-squared Test: Statistic = 61.1078, p-value = 0.0000
The data is not normal (reject H0).
Anderson-Darling Test:
Statistic: 9.4957
Significance level 15.0%: 0.5690 (Reject H0)
Significance level 10.0%: 0.6480 (Reject H0)
Significance level 5.0%: 0.7780 (Reject H0)
Significance level 2.5%: 0.9070 (Reject H0)
Significance level 1.0%: 1.0790 (Reject H0)

Normality Tests for capacitors:
```