EDS Assignment 5

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Roll no. 342

Batch: C2

Fish Dataset

CSV File:

Fish Data.csv

1 to 99 of 99 entries Filter

Species	Weight	Length1	Length2	Length3	Height	Width
Bream	242	23.2	25.4	30	11.52	4.02
Bream	290	24	26.3	31.2	12.48	4.3056
Bream	340	23.9	26.5	31.1	12.3778	4.6961
Bream	363	26.3	29	33.5	12.73	4.4555
Bream	430	26.5	29	34	12.444	5.134
Bream	450	26.8	29.7	34.7	13.6024	4.9274
Bream	500	26.8	29.7	34.5	14.1795	5.2785
Bream	390	27.6	30	35	12.67	4.69
Bream	450	27.6	30	35.1	14.0049	4.8438
Bream	500	28.5	30.7	36.2	14.2266	4.9594
Bream	475	28.4	31	36.2	14.2628	5.1042
Bream	500	28.7	31	36.2	14.3714	4.8146
Bream	500	29.1	31.5	36.4	13.7592	4.368
Bream	340	29.5	32	37.3	13.9129	5.0728
Bream	600	29.4	32	37.2	14.9544	5.1708
Bream	600	29.4	32	37.2	15.438	5.58
Bream	700	30.4	33	38.3	14.8604	5.2854
Bream	700	30.4	33	38.5	14.938	5.1975
Bream	610	30.9	33.5	38.6	15.633	5.1338
Bream	650	31	33.5	38.7	14.4738	5.7276
Bream	575	31.3	34	39.5	15.1285	5.5695
Bream	685	31.4	34	39.2	15.9936	5.3704
Bream	620	31.5	34.5	39.7	15.5227	5.2801
Bream	680	31.8	35	40.6	15.4686	6.1306
Bream	700	31.9	35	40.5	16.2405	5.589
Bream	725	31.8	35	40.9	16.36	6.0532
Bream	720	32	35	40.6	16.3618	6.09

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Code:

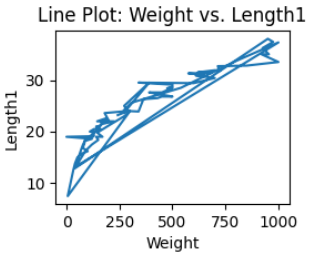
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
data = pd.read_csv('/content/Fish Data.csv')

# Display the first few rows of the dataset
print(data.head())

# Create an interactive dashboard with different types
of plots
plt.figure(figsize=(12, 8))

# 1. Line plot
plt.subplot(3, 4, 1)
plt.plot(data['Weight'], data['Length1'])
plt.title('Line Plot: Weight vs. Length1')
plt.xlabel('Weight')
plt.ylabel('Length1')

# 2. Bar plot
plt.subplot(3, 4, 2)
plt.bar(data['Species'], data['Weight'])
plt.title('Bar Plot: Species vs. Weight')
plt.xlabel('Species')
plt.ylabel('Weight')

# 3. Scatter plot
plt.subplot(3, 4, 3)
plt.scatter(data['Length2'], data['Length3'])
plt.title('Scatter Plot: Length2 vs. Length3')
plt.xlabel('Length2')
plt.ylabel('Length3')

# 4. Histogram
plt.subplot(3, 4, 4)
plt.hist(data['Height'], bins=20)
```

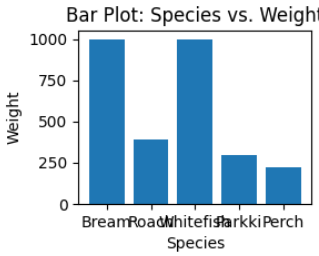
```
plt.title('Histogram: Height Distribution')
plt.xlabel('Height')
plt.ylabel('Frequency')

# 5. Pie chart
plt.subplot(3, 4, 5)
plt.pie(data['Weight'], labels=data['Species'],
autopct='%1.1f%%')
plt.title('Pie Chart: Weight Distribution by Species')

# 6. Box plot
plt.subplot(3, 4, 6)
sns.boxplot(x='Species', y='Width', data=data)
plt.title('Box Plot: Width Distribution by Species')
plt.xlabel('Species')
plt.ylabel('Width')

# 7. Area plot
plt.subplot(3, 4, 7)
plt.stackplot(data.index, data['Length1'],
data['Length2'], labels=['Length1', 'Length2'])
plt.title('Area Plot: Length1 vs. Length2')
plt.xlabel('Index')
plt.ylabel('Length')

# 8. Violin plot
plt.subplot(3, 4, 8)
sns.violinplot(x='Species', y='Length3', data=data)
plt.title('Violin Plot: Length3 Distribution by
Species')
plt.xlabel('Species')
plt.ylabel('Length3')

# 9. Heatmap
plt.subplot(3, 4, 9)
correlation_matrix = data[['Weight', 'Length1',
'Length2', 'Length3', 'Height', 'Width']].corr()
sns.heatmap(correlation_matrix, annot=True,
cmap='coolwarm')
plt.title('Heatmap: Correlation Matrix')

# 10. Polar plot
```

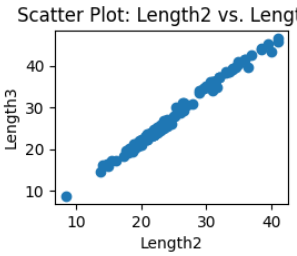
```
plt.subplot(3, 4, 10, projection='polar')
theta = data['Weight']
r = data['Height']
plt.plot(theta, r)
plt.title('Polar Plot: Weight vs. Height')

# Adjust subplot spacing
plt.tight_layout()

# Show the interactive dashboard
plt.show()
```

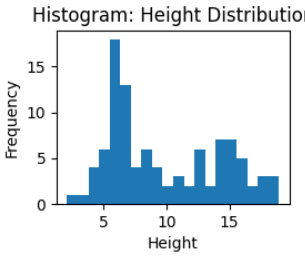
Output:

```
Species  Weight  Length1  Length2  Length3   Height
Width
0   Bream   242.0     23.2     25.4     30.0  11.5200
4.0200
1   Bream   290.0     24.0     26.3     31.2  12.4800
4.3056
2   Bream   340.0     23.9     26.5     31.1  12.3778
4.6961
3   Bream   363.0     26.3     29.0     33.5  12.7300
4.4555
4   Bream   430.0     26.5     29.0     34.0  12.4440
5.1340
```

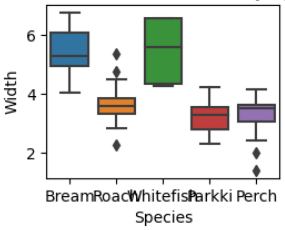

Line Plot: Weight vs. Length1
Length1
Weight

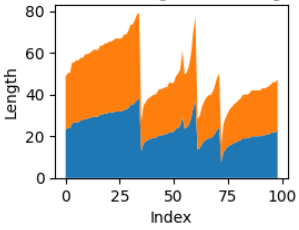

Bar Plot: Species vs. Weight
Weight
Bream
Roach
Whitefish
Parkki
Perch
Species

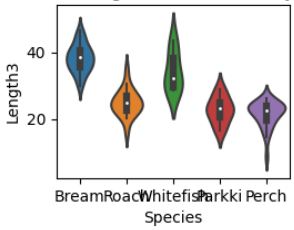

Scatter Plot: Length2 vs. Length3
Length3
Length2

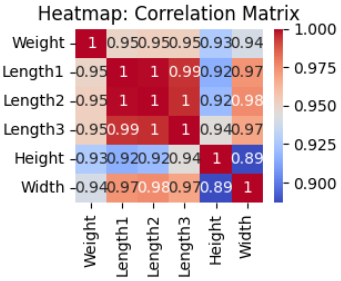

Histogram: Height Distribution
Frequency
Height

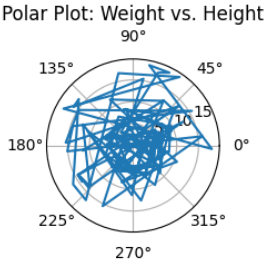

Pie Chart: Weight Distribution by Species


Box Plot: Width Distribution by Species
Width
Bream
Roach
Whitefish
Parkki
Perch
Species


Area Plot: Length1 vs. Length2
Length
Index


Violin Plot: Length3 Distribution by Species
Length3
Bream
Roach
Whitefish
Parkki
Perch
Species


Heatmap: Correlation Matrix
Weight
Length1
Length2
Length3
Height
Width


Polar Plot: Weight vs. Height