

DATA VISUALIZATION **Distributions**

A photograph of a person taking a mirror selfie. A large, bold, blue number '4' is overlaid on the left side of the image, partially obscuring the person's face and torso. The person is wearing a red and white striped shirt and is holding a smartphone to take the picture. The background shows a mirror and some clothing hanging on a rack.

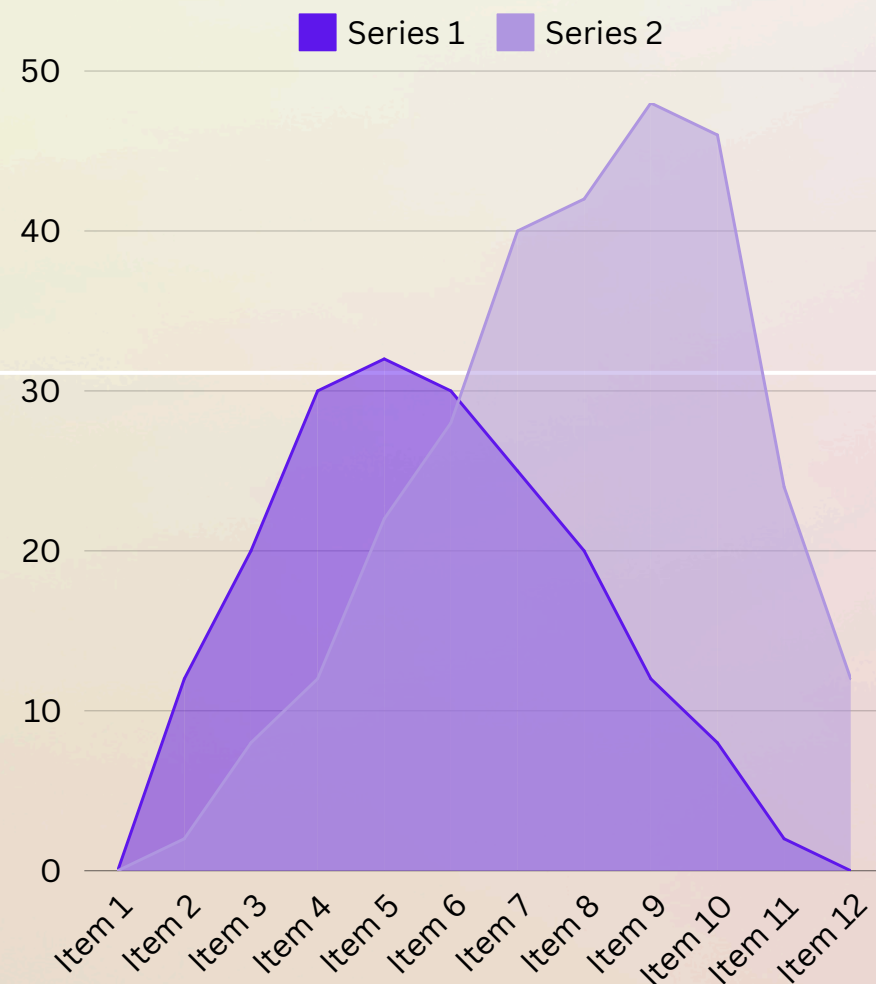
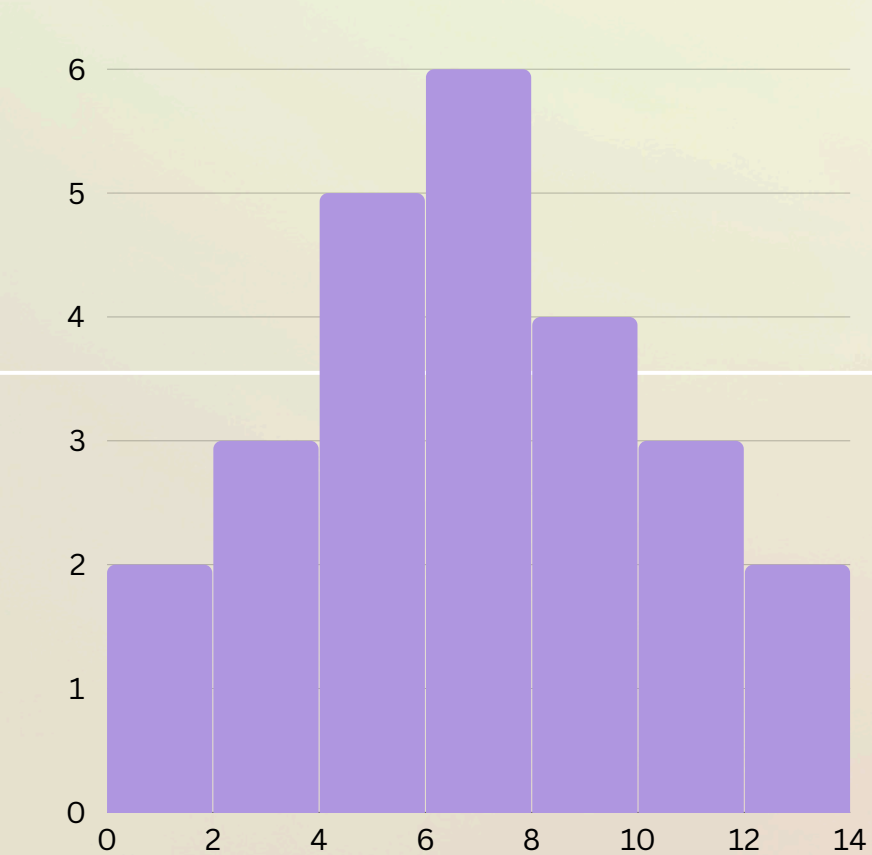
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Abdul Rauf jatoi

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Distribution

Distribution visualization displays how data values are spread out over a range, revealing patterns, frequencies, and outliers. It helps understand the shape and spread of data for insightful analysis.



histogram

```
1 import pandas as pd
2 import numpy as np
3 import seaborn as sns
4 import matplotlib.pyplot as plt
5
6 # Create a simple dataset
7 np.random.seed(0)
8 data = pd.DataFrame({
9     'value': np.random.normal(loc=0,
10 })
11
12 # Histogram
13 plt.figure(figsize=(15, 5))
14
15 plt.subplot(1, 3, 1)
16 sns.histplot(data['value'], kde=False)
17 plt.title('Histogram')
18 plt.xlabel('Value')
19 plt.ylabel('Frequency')
20 plt.show()
```

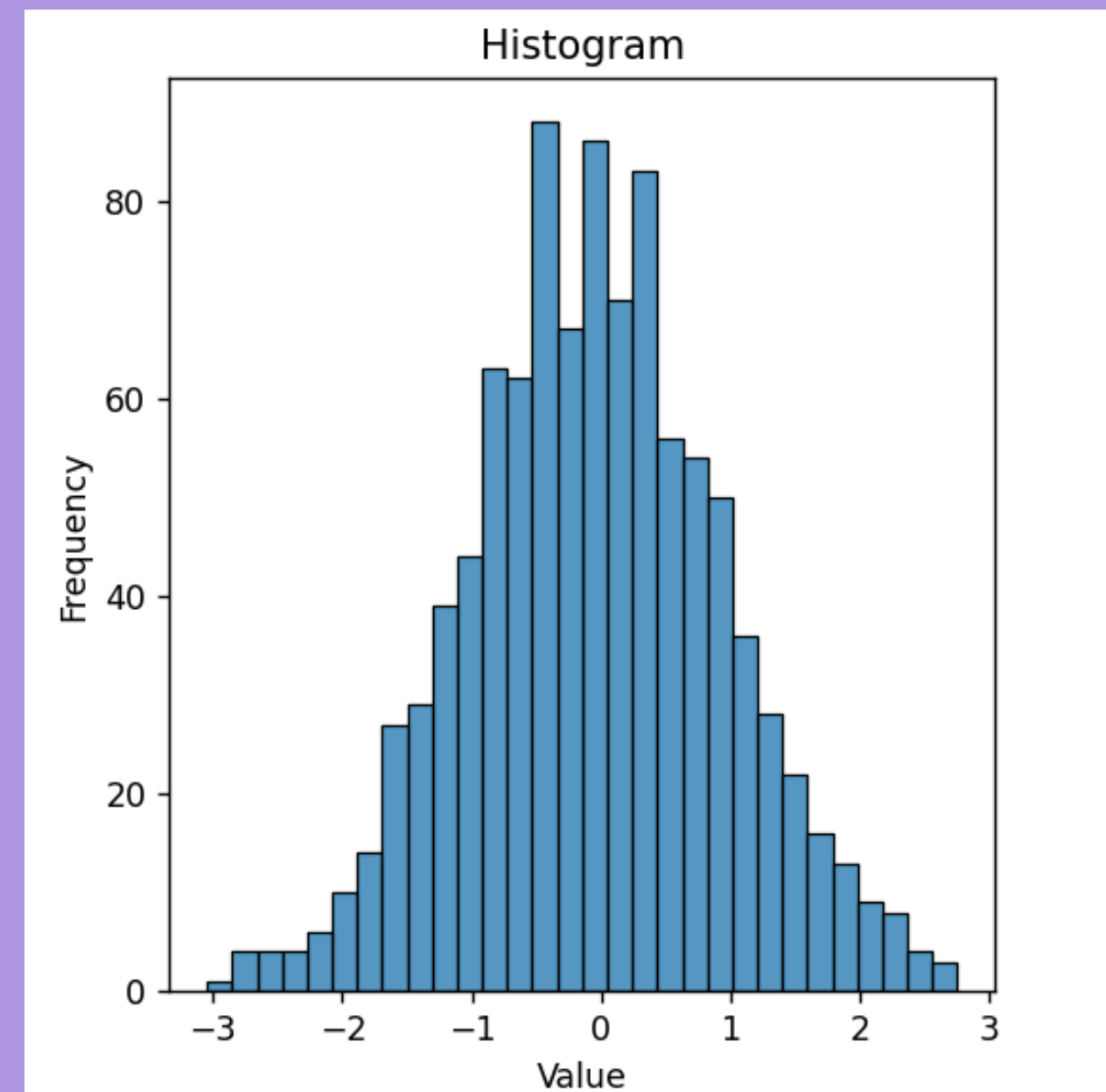
PROBLEMS 4 DEBUG CONSOLE TERMINAL PORTS

✓ TERMINAL python3.12 - vid4

werShell.Commands.SetLocationCommand

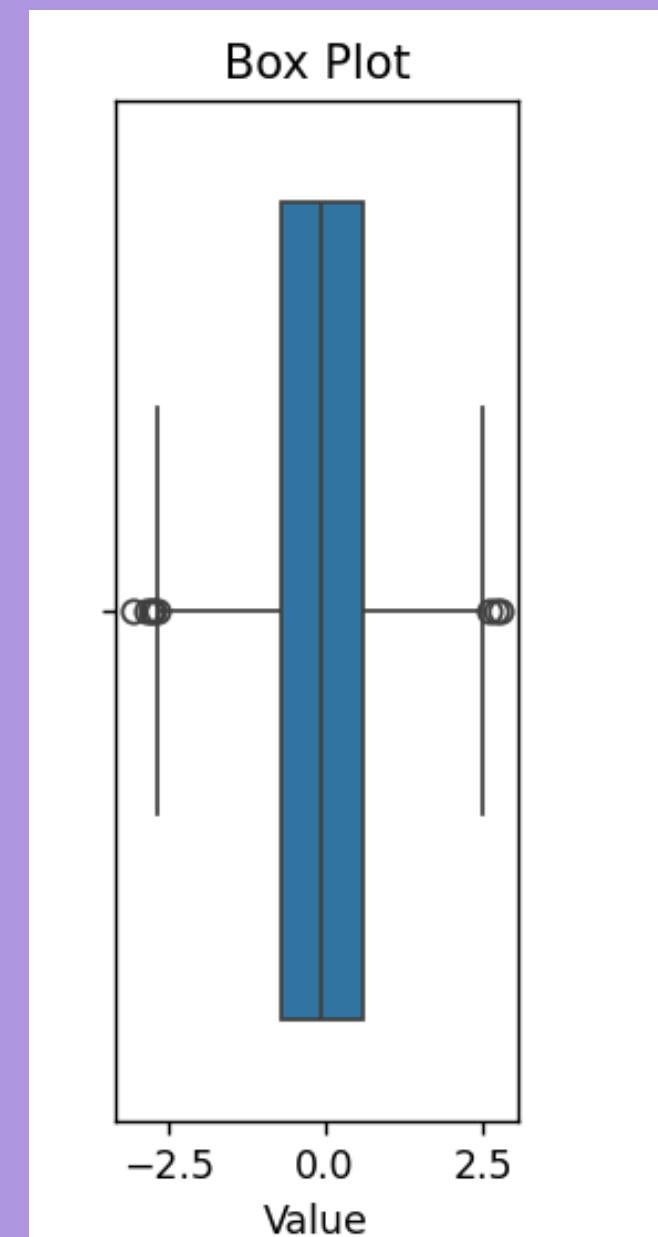
PS D:\Documents\GitHub\Data-Visualization> cd vid4

PS D:\Documents\GitHub\Data-Visualization\vid4> python ex1



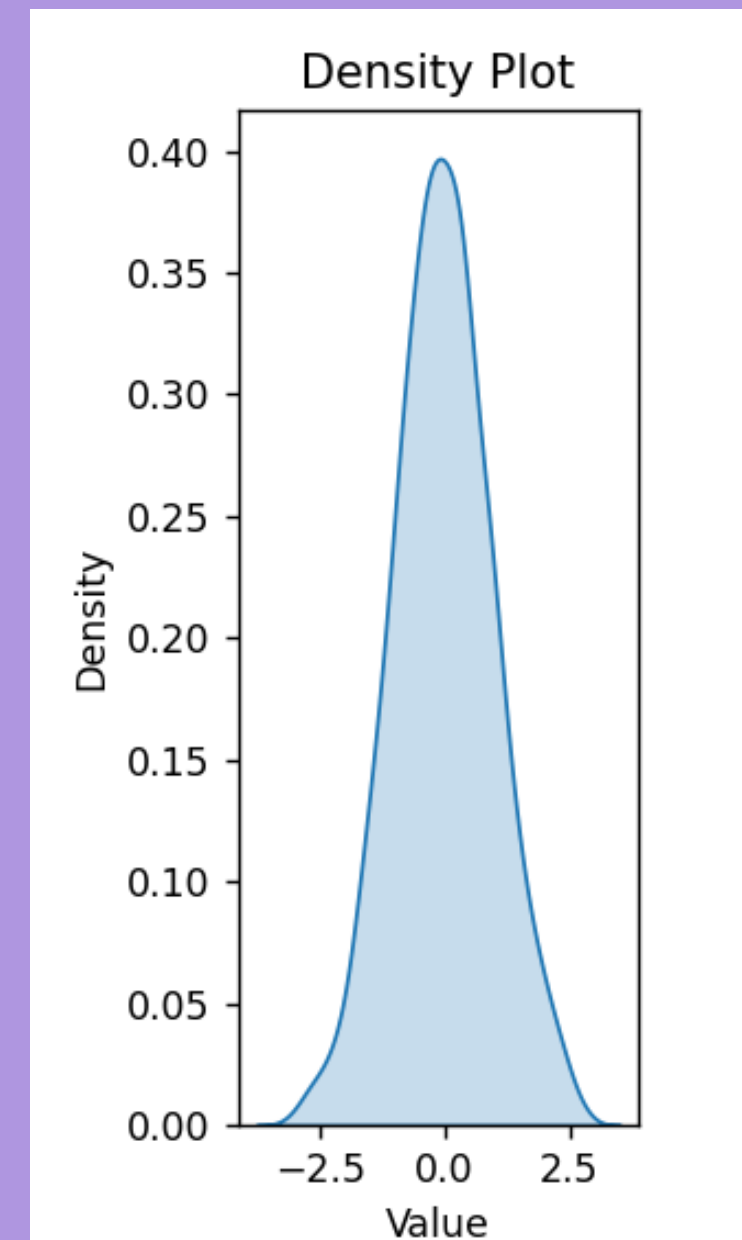
Box Plot

```
1 import pandas as pd
2 import numpy as np
3 import seaborn as sns
4 import matplotlib.pyplot as plt
5
6 # Create a simple dataset
7 np.random.seed(0)
8 data = pd.DataFrame({
9     'value': np.random.normal(loc=0,
10 })
11
12 # Box Plot
13 plt.subplot(1, 3, 2)
14 sns.boxplot(x=data['value'])
15 plt.title('Box Plot')
16 plt.xlabel('Value')
17 plt.show()
```

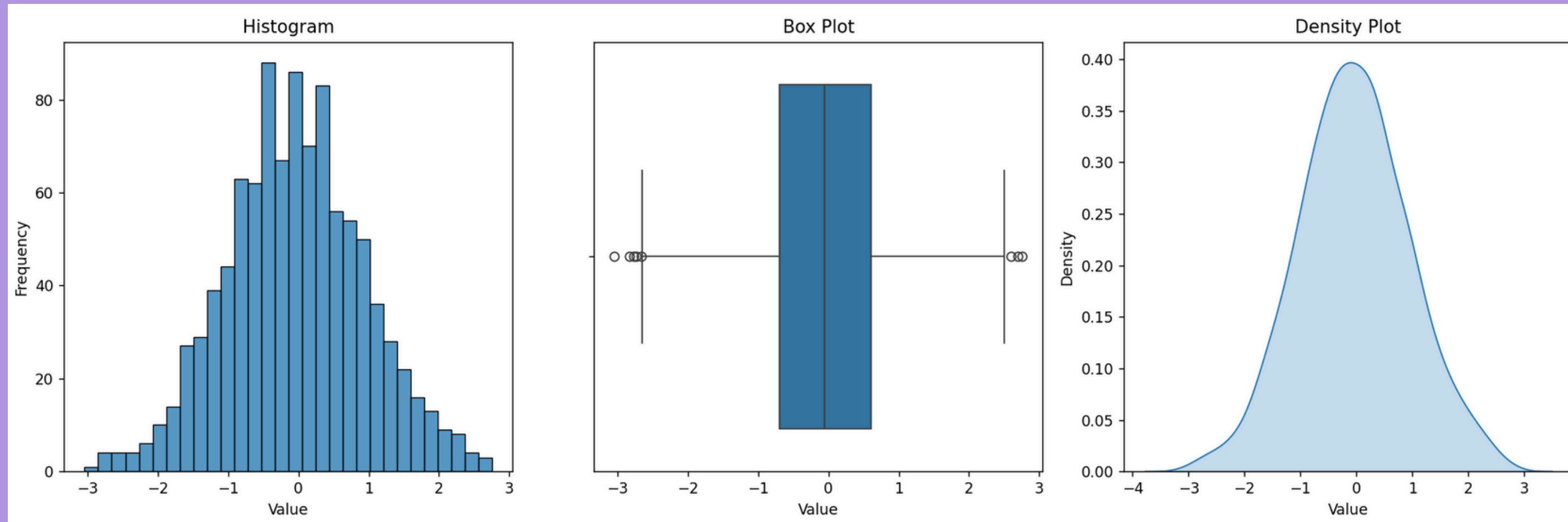


Density Plot

```
1 import pandas as pd
2 import numpy as np
3 import seaborn as sns
4 import matplotlib.pyplot as plt
5
6 # Create a simple dataset
7 np.random.seed(0)
8 data = pd.DataFrame({
9     'value': np.random.normal(loc=0,
10 })
11
12 # Density Plot
13 plt.subplot(1, 3, 3)
14 sns.kdeplot(data['value'], fill=True)
15 plt.title('Density Plot')
16 plt.xlabel('Value')
17 plt.ylabel('Density')
18 plt.show()
```



plots



code

```
4 > * test.py > ...
1  import pandas as pd
2  import numpy as np
3  import seaborn as sns
4  import matplotlib.pyplot as plt
5
6  # Create a simple dataset
7  np.random.seed(8)
8  data = pd.DataFrame({
9      'value': np.random.normal(loc=0, scale=1, size=1000) # Normally distributed data
10 })
11
12 # Histogram
13 plt.figure(figsize=(15, 5))
14
15 plt.subplot(1, 3, 1)
16 sns.histplot(data['value'], kde=False, bins=30)
17 plt.title('Histogram')
18 plt.xlabel('Value')
19 plt.ylabel('Frequency')
20
21 # Box Plot
22 plt.subplot(1, 3, 2)
23 sns.boxplot(x=data['value'])
24 plt.title('Box Plot')
25 plt.xlabel('Value')
26
27 # Density Plot
28 plt.subplot(1, 3, 3)
29 sns.kdeplot(data['value'], fill=True)
30 plt.title('Density Plot')
31 plt.xlabel('Value')
32 plt.ylabel('Density')
33
34 plt.tight_layout()
35 plt.show()
```

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