Python Programming
Unit 06 – Lecture 06 Notes
Plot Types and Subplots

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Contents

1 Lecture Overview

Different plot types are used for different questions:

- trends → line plots,
- comparisons → bar charts,
- distributions → histograms,
- relationships → scatter plots.

Subplots help you combine multiple plots in one figure.

2 Core Concepts

2.1 Line Plot

Good for trends (time series).

```
plt.plot(x, y)
```

2.2 Bar Chart

Good for category comparisons.

```
plt.bar(categories, values)
```

2.3 Histogram

Good for distributions.

```
plt.hist(values, bins=10)
```

2.4 Scatter Plot

Good for relationships between two numeric variables.

```
plt.scatter(x, y)
```

2.5 Pie Chart (Use Carefully)

Pie charts show proportions, but can be hard to compare precisely.

```
plt.pie(values, labels=labels, autopct="%1.1f%%")
```

2.6 Subplots

Create multiple axes in one figure:

```
fig, ax = plt.subplots(2, 2, figsize=(8, 6))
ax[0, 0].plot(x, y)
```

3 Demo Walkthrough

File: `demo/matplotlib_plot_types_demo.py`
The demo creates a 2x2 subplot figure and saves it into `images/`.

4 Interactive Checkpoints (with Solutions)

Checkpoint 1 Solution

Question: distribution of marks?
Answer: Histogram.

Checkpoint 2 Solution

Question: compare marks of 5 subjects?
Answer: Bar chart.

5 Practice Exercises (with Solutions)

Exercise 1: Histogram of Random Numbers

Solution:

```
import numpy as np
import matplotlib.pyplot as plt

x = np.random.randn(1000)
plt.hist(x, bins=20)
plt.title("Histogram")
plt.show()
```

6 Exit Question (with Solution)

Question: function name used to create subplots?
Answer: `subplots`