



Lesson Plan: Data Visualization with Matplotlib



Goal

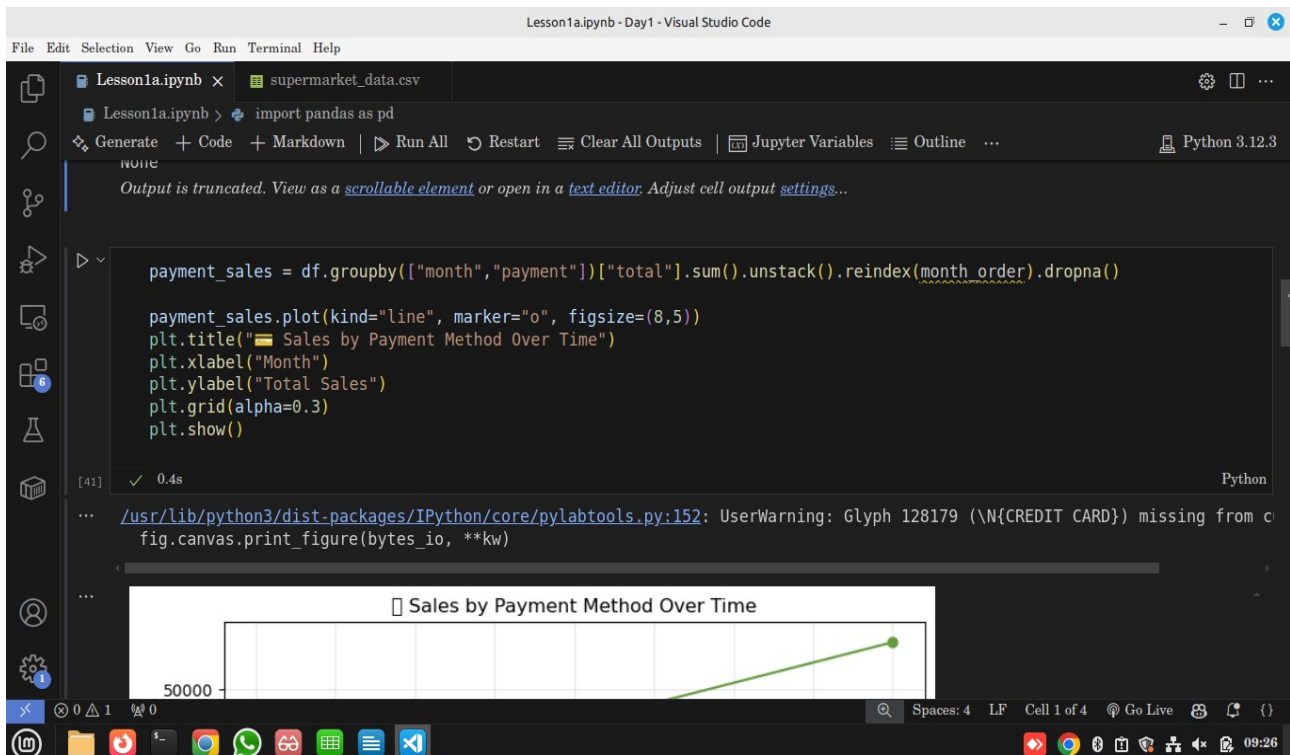
Learn the basics of Matplotlib and visualize business data using **line**, **bar**, **histogram** charts.

1. Introduction

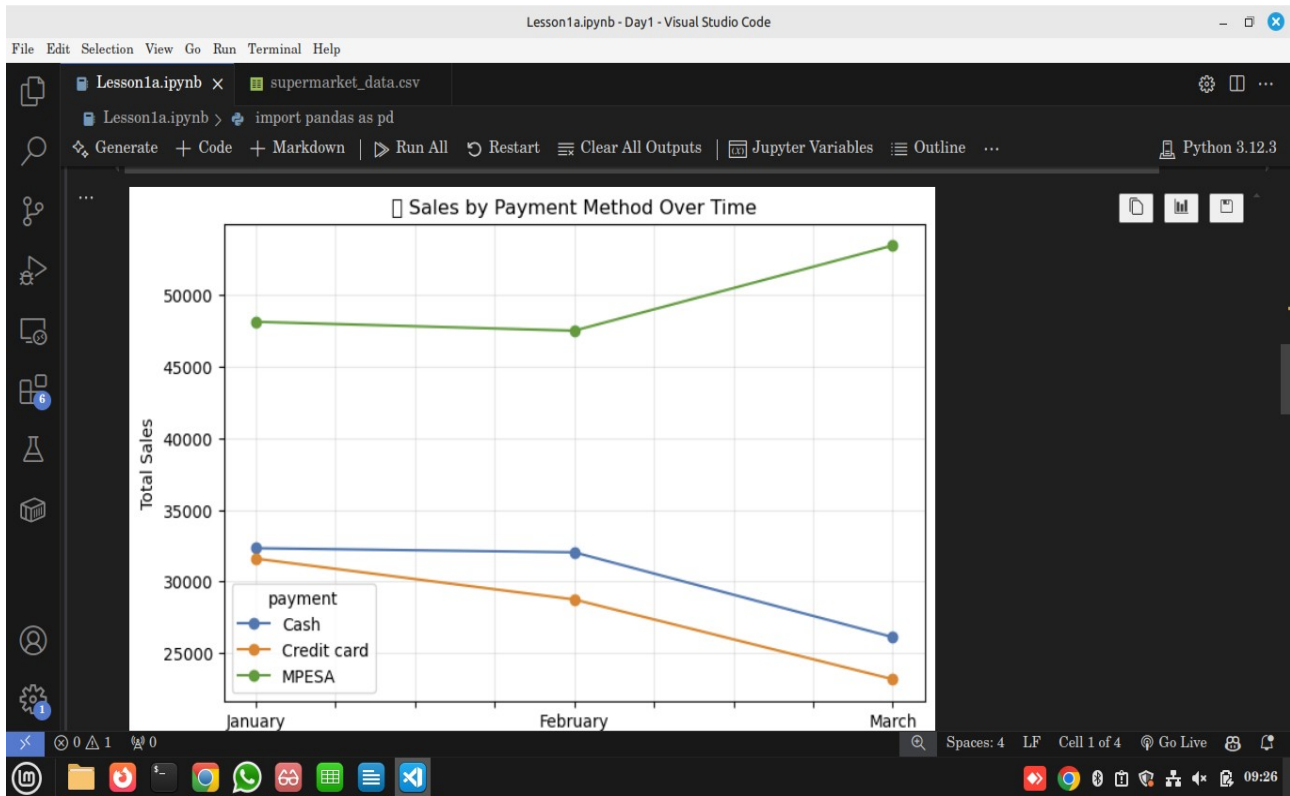
- Matplotlib = the “engine” of Python data visualization.
- Used for quick plots and customized professional graphs.
- Works well with **pandas DataFrames**.

2. Line Graph: 🏠 Sales by Payment Method Over Time

Code



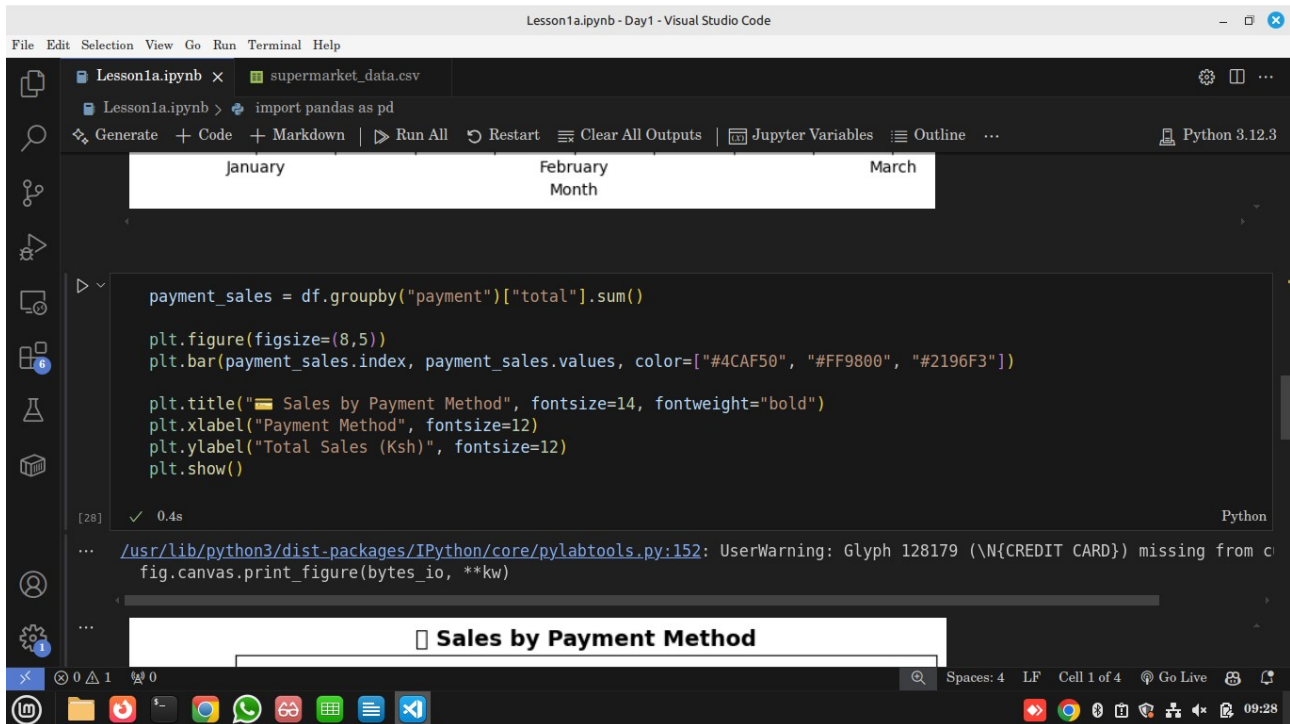
Output



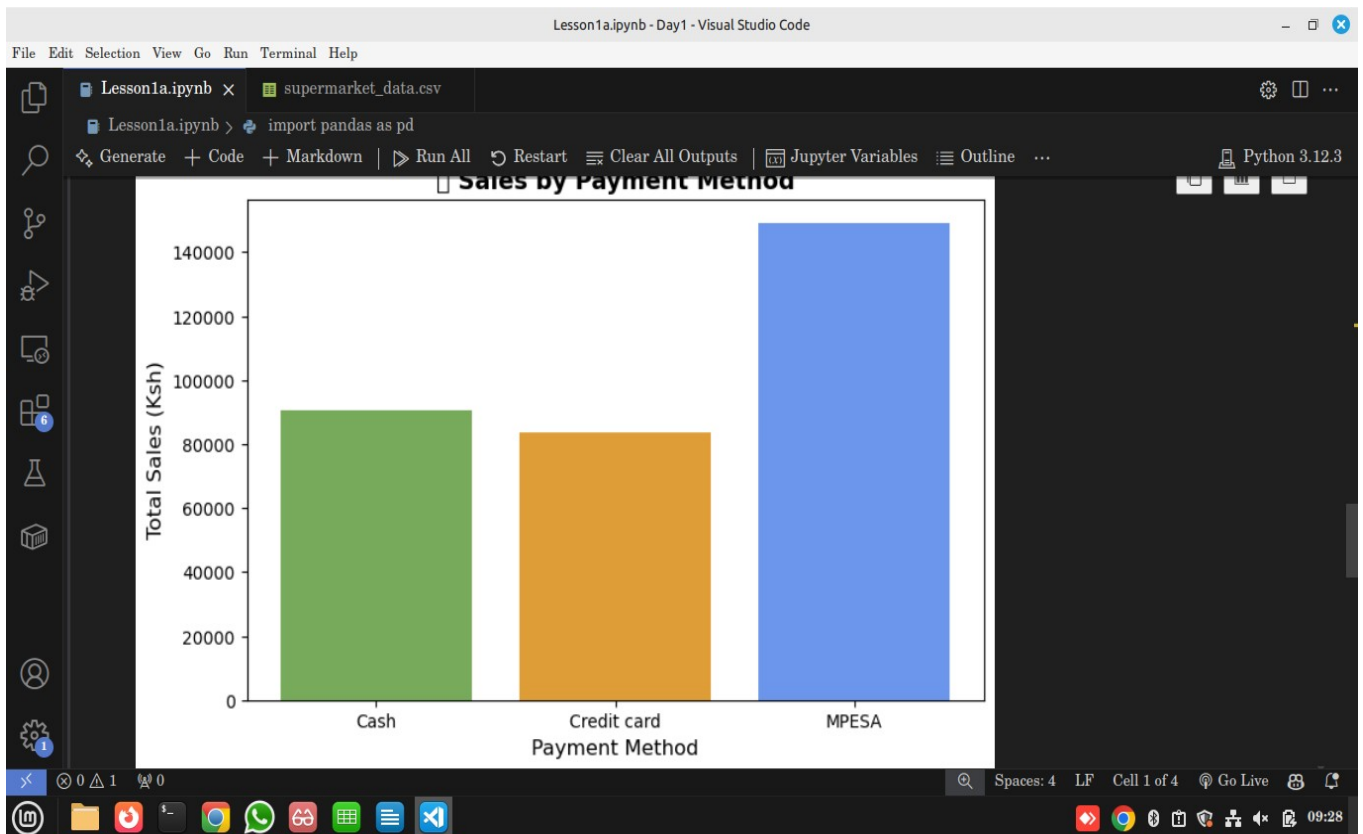
Explanation

- **Line charts show trends over time.**
- Here, we compare **Cash, MPESA, Credit Card** sales monthly.
- Helps businesses see:
 - Which method is most popular.
 - Seasonal changes in payment preferences.

3. Bar Chart: Total Sales by City



Output

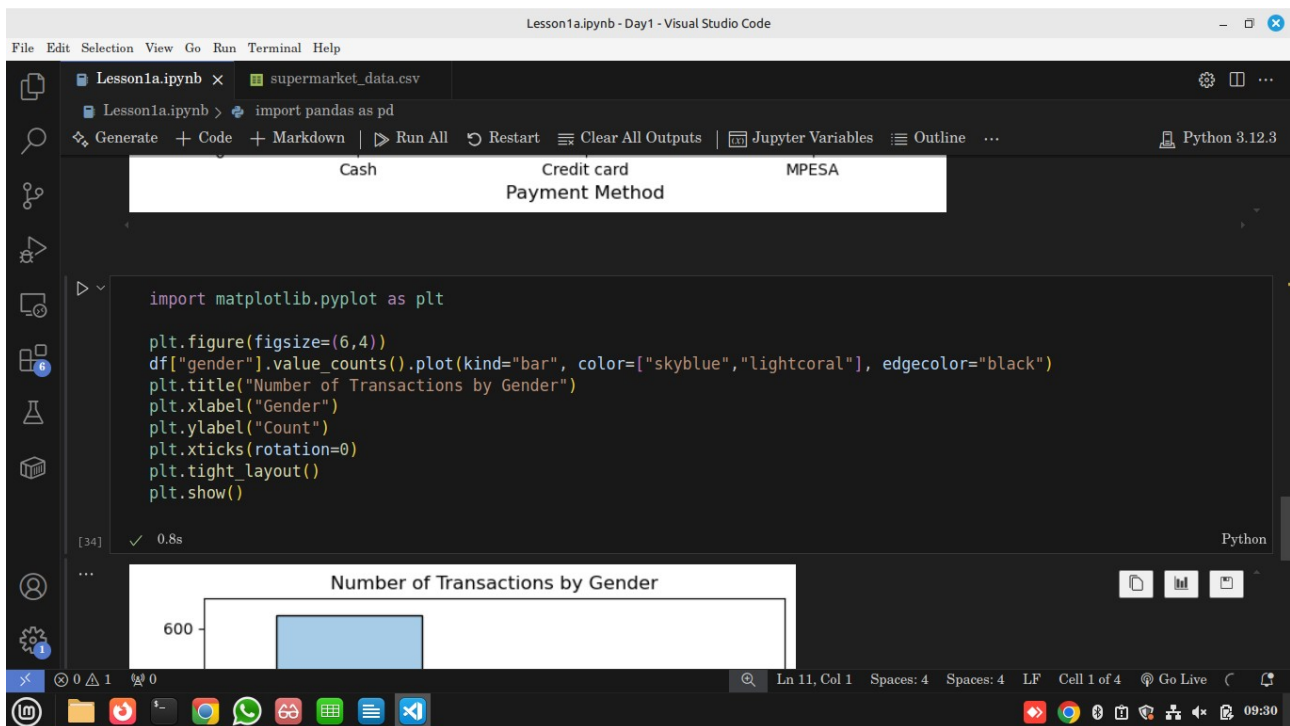


Explanation

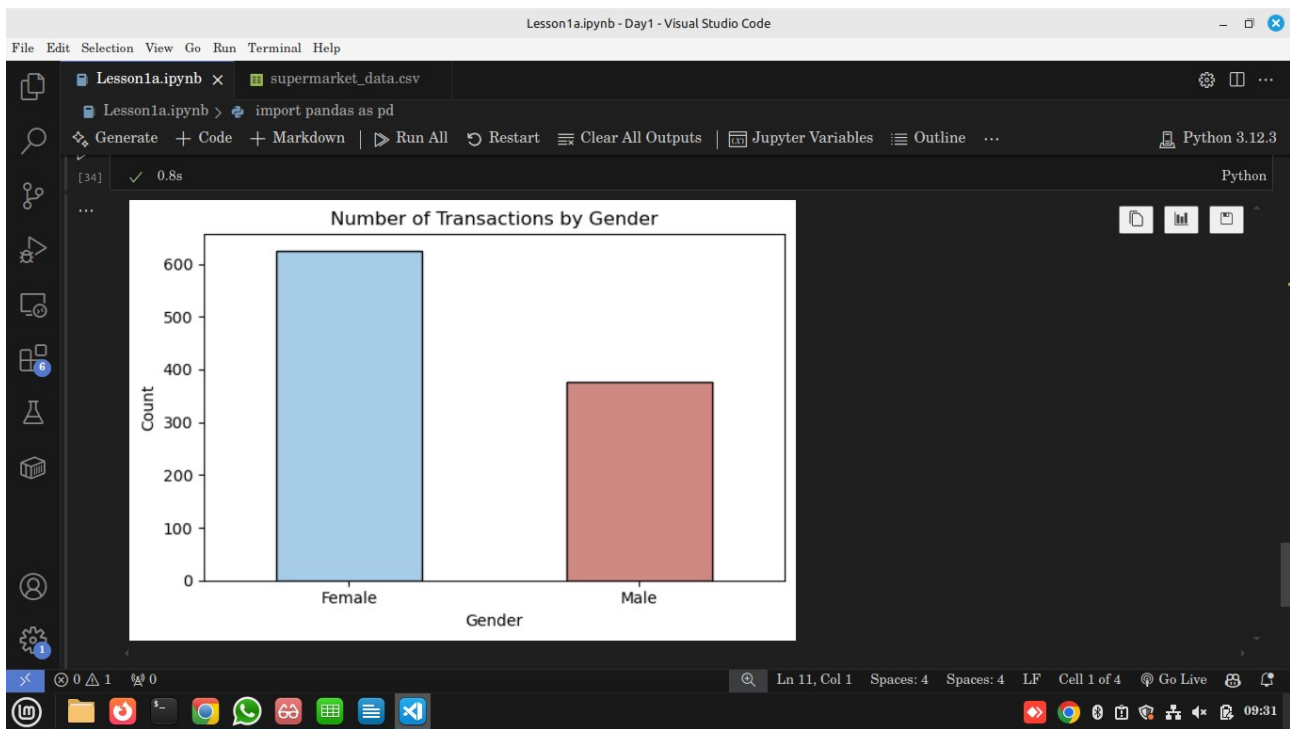
- Bar charts are best for **comparing categories**.
 - Shows which city brings in the highest sales (Nairobi vs Nakuru vs Kisumu).
 - Business can decide where to open new branches or run promotions.
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4. Histogram: 🧑 Gender Distribution of Purchases

Code



Output



Explanation

- Histogram shows **distribution of data**.
- In this dataset: more purchases by **female vs male customers**.
- Helps in **targeted marketing** (e.g., female-focused products).

5. Reflection & Q/A (10 min)

- **Line chart** → Time trends.
- **Bar chart** → Category comparisons.
- **Histogram** → Distribution of values.
- Students discuss: *Which chart would you use for product sales? For customer demographics?*