A **mini project** that uses both **NumPy** and **Pandas**. We'll simulate **sales data** for a fictional company, analyze it, and get insights using basic data analysis techniques.

Mini Project: Sales Data Simulation & Analysis

Objective:

1. Generate random monthly sales data for a few products.
2. Analyze total sales, average sales, top performers, etc.
3. Use NumPy for data simulation, and Pandas for analysis.

Step 1: Generate Fake Data

```
import numpy as np
import pandas as pd

# Reproducibility
np.random.seed(0)

# Simulate data
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun']
products = ['Laptop', 'Tablet', 'Smartphone', 'Monitor', 'Keyboard']

# Generate random sales numbers (in units sold)
sales_data = np.random.randint(50, 500, size=(len(products), len(months)))

# Create DataFrame
df = pd.DataFrame(sales_data, index=products, columns=months)
df.index.name = 'Product'

print(df)
```

Step 2: Analyze the Data

```
# Total sales per product
total_sales = df.sum(axis=1)
print("Total Sales by Product:\n", total_sales)

# Total sales per month
monthly_totals = df.sum(axis=0)
print("\nTotal Sales by Month:\n", monthly_totals)

# Average monthly sales per product
average_sales = df.mean(axis=1)
print("\nAverage Monthly Sales:\n", average_sales)

# Best-selling product
best_product = total_sales.idxmax()
print(f"\nBest-Selling Product: {best_product} with
{total_sales.max()} units")

# Month with highest overall sales
best_month = monthly_totals.idxmax()
print(f"Best Month: {best_month} with {monthly_totals.max()}
units sold")
```
