Project 1 Dataset (CSV File)

File Name: `ecommerce_sales.csv`

Sample CSV Data (Give this to students)

```
Order_ID,Date,Customer_ID,Region,Product,Category,Quantity,Price,Discount,P
ayment_Method
1001,2024-01-02,C101,North,Laptop,Electronics,1,60000,5000,UPI
1002,2024-01-03,C102,South,Mobile,Electronics,2,20000,2000,Card
1003,2024-01-05,C103,West,Shoes,Fashion,3,2500,0,COD
1004,2024-01-07,C104,North,TV,Electronics,1,45000,3000,UPI
1005,2024-01-10,C105,East,T-shirt,Fashion,4,800,0,Card
1006,2024-01-11,C106,South,Headphones,Electronics,2,3000,500,UPI
1007,2024-01-13,C107,West,Watch,Accessories,1,7000,1000,Card
1008,2024-01-15,C108,North,Laptop,Electronics,1,65000,4000,UPI
1009,2024-01-17,C109,East,Shoes,Fashion,2,3000,200,COD
1010,2024-01-20,C110,South,Mobile,Electronics,1,22000,1500,Card
```

Students can load using:

```
import pandas as pd

df = pd.read_csv("ecommerce_sales.csv")
```

Project-Level Pandas Practice Questions

Level 1 – Basic Business Analytics

1. Calculate total revenue (after discount).
2. Create a new column: `Final_Amount = Quantity × Price - Discount`.
3. Find total sales per region.
4. Find total sales per category.
5. Which product generated highest revenue?
6. Find average order value.
7. Count total number of orders per payment method.

Level 2 – Analytical Thinking

8. Find top 3 customers by total spending.
9. Find month-wise sales trend.
10. Which region gives highest average order value?
11. Find products with zero discount.
12. Calculate total discount given.
13. Find most frequently sold product.
14. Find category with highest quantity sold.
15. Find customers who made multiple purchases.

Level 3 – Advanced Project-Level Questions

16. Create profit column:
    Assume cost = 70% of price
    Profit = Final_Amount - (0.7 × Price × Quantity)
17. Find profit per region.
18. Identify loss-making orders.
19. Find correlation between discount and quantity.
20. Find which payment method gives highest revenue.
21. Detect outliers in order amount.
22. Create sales growth comparison (first half vs second half).
23. Rank regions based on revenue.
24. Create pivot table: Region vs Category.
25. Identify most profitable product.

Real Interview Case-Based Questions

26. If discount increases by 10%, how revenue changes?
27. Remove customers with only one purchase and re-analyze.

Project Dataset 2: Banking Transactions Dataset

File Name: `bank_transactions.csv`

Sample CSV Data

```
Transaction_ID,Date,Customer_ID,City,Account_Type,Transaction_Type,Amount,B
alance_After,Channel
T1001,2024-01-02,C101,Lucknow,Savings,Deposit,15000,45000,Online
T1002,2024-01-03,C102,Delhi,Current,Withdrawal,5000,20000,ATM
T1003,2024-01-04,C103,Mumbai,Savings,Deposit,20000,70000,Branch
T1004,2024-01-05,C101,Lucknow,Savings,Withdrawal,3000,42000,ATM
T1005,2024-01-06,C104,Delhi,Savings,Deposit,10000,30000,Online
T1006,2024-01-07,C105,Mumbai,Current,Withdrawal,7000,15000,Branch
T1007,2024-01-08,C106,Lucknow,Savings,Deposit,25000,80000,Online
T1008,2024-01-09,C102,Delhi,Current,Deposit,12000,32000,Online
T1009,2024-01-10,C107,Mumbai,Savings,Withdrawal,4000,25000,ATM
T1010,2024-01-11,C108,Delhi,Savings,Deposit,18000,60000,Branch
```

Students load:

```
import pandas as pd
df = pd.read_csv("bank_transactions.csv")
```

Project-Level Pandas Practice Questions

Level 1 – Understanding the Data

1. Find total deposits and total withdrawals.
2. Count number of transactions by transaction type.
3. Find average transaction amount.
4. Find total transactions per city.
5. Which channel (ATM/Online/Branch) is most used?

6. Find highest single transaction amount.
7. Find customer with maximum balance.

Level 2 – Analytical Thinking

8. Find total deposit amount per city.
9. Find total withdrawal amount per account type.
10. Identify customers with more than 2 transactions.
11. Find city with highest total transaction amount.
12. Find daily transaction trend.
13. Find percentage of online transactions.
14. Find customers who only deposit but never withdraw.
15. Detect customers with frequent ATM withdrawals.

Level 3 – Risk & Banking Analytics (Interview Level)

16. Identify suspicious customers:

- Large withdrawals (> 20000)
- Multiple withdrawals in short period

17. Calculate net balance change per customer.
18. Rank cities based on total deposits.
19. Compare Savings vs Current account transaction behavior.
20. Detect inactive customers (only 1 transaction).
21. Find correlation between transaction amount and channel.
22. Create transaction category:

- Small (<5000)
- Medium (5000–15000)
- Large (>15000)

23. Simulate fraud scenario:

- Sudden large withdrawal after deposit

24. Find top 5 high-value customers.
25. Create monthly transaction summary report.