

Project - : Analyzing Customer Orders Using Python

Source Code - :

```
from collections import Counter

# 1. Store customer orders
customers = ["Alice", "Bob", "Charlie", "David", "Eva"]

orders = {
    "Alice": [("Smartphone", 699, "Electronics"), ("Jeans", 45, "Clothing")],
    "Bob": [("Blender", 60, "Home Essentials"), ("T-shirt", 25, "Clothing")],
    "Charlie": [("Laptop", 1200, "Electronics")],
    "David": [("Vacuum Cleaner", 150, "Home Essentials"), ("Microwave", 90, "Home Essentials")],
    "Eva": [("Headphones", 80, "Electronics"), ("Jacket", 100, "Clothing"), ("Tablet", 300, "Electronics")]
}

# 2. Classify products by category
product_to_category = {
    "Smartphone": "Electronics",
    "Jeans": "Clothing",
    "Blender": "Home Essentials",
    "T-shirt": "Clothing",
    "Laptop": "Electronics",
    "Vacuum Cleaner": "Home Essentials",
    "Microwave": "Home Essentials",
    "Headphones": "Electronics",
    "Jacket": "Clothing",
    "Tablet": "Electronics"
}

categories = set(product_to_category.values())
print("Available Product Categories:", categories)

# 3. Analyze customer orders
customer_spending = {}
customer_classification = {}

for customer, order_list in orders.items():
    total = sum([price for _, price, _ in order_list])
    customer_spending[customer] = total
    if total > 100:
        customer_classification[customer] = "High Value"
    elif 50 <= total <= 100:
        customer_classification[customer] = "Moderate Value"
    else:
        customer_classification[customer] = "Low Value"

# 4. Generate business insights

# A. Revenue per category
category_revenue = {}
for order_list in orders.values():
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        for product, price, category in order_list:
            category_revenue[category] = category_revenue.get(category, 0) +
price

# B. Unique products
unique_products = set()
for order_list in orders.values():
    for product, _, _ in order_list:
        unique_products.add(product)

# C. Customers who purchased electronics
electronics_customers = [customer for customer, order_list in
orders.items()
                        if any(category == "Electronics" for _, _, category in order_list)]

# D. Top 3 highest-spending customers
top_customers = sorted(customer_spending.items(), key=lambda x: x[1],
reverse=True)[:3]

# 5. Organize and display data

print("\nCustomer Spending Summary:")
for customer in customers:
    print(f"{customer}: {customer_spending[customer]} - {customer_classification[customer]}")

print("\nRevenue by Category:")
for category, revenue in category_revenue.items():
    print(f"{category}: {revenue}")

print("\nTop 3 Highest-Spending Customers:")
for customer, amount in top_customers:
    print(f"{customer}: {amount}")

print("\nCustomers who purchased Electronics:", electronics_customers)

# Set operations: Customers who purchased from multiple categories
customer_categories = {
    customer: set(category for _, _, category in order_list)
    for customer, order_list in orders.items()
}
multi_category_customers = [customer for customer, cats in
customer_categories.items() if len(cats) > 1]

print("\nCustomers who purchased from multiple categories:", multi_category_customers)

# Customers who bought both electronics and clothing
electronics_and_clothing = [customer for customer, cats in
customer_categories.items()
                            if "Electronics" in cats and "Clothing" in
cats]

print("Customers who bought both Electronics and Clothing:", electronics_and_clothing)

```