```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns


# Load the datasets
customers = pd.read_csv('Customers.csv')
products = pd.read_csv('Products.csv')
transactions = pd.read_csv('Transactions.csv')

# Preview data
print(customers.head())
print(products.head())
print(transactions.head())
```

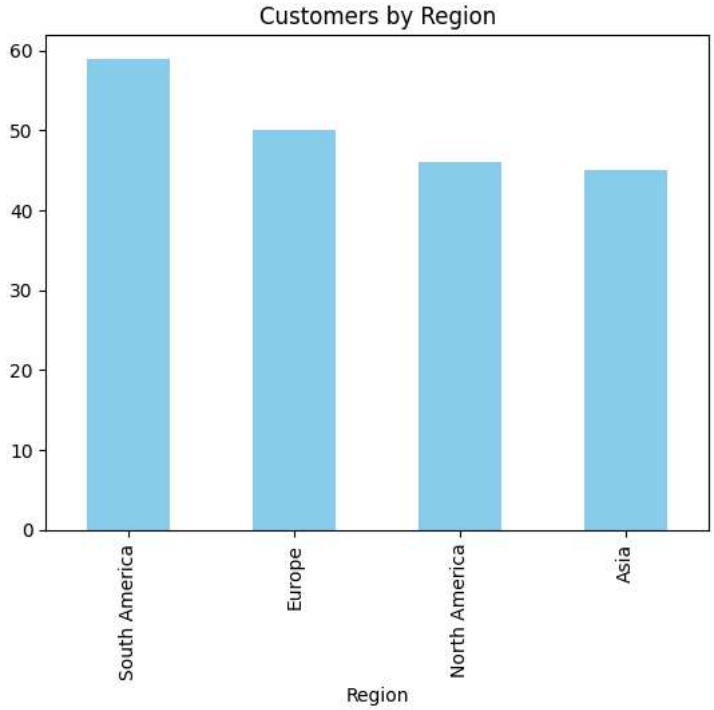
```
  CustomerID        CustomerName         Region  SignupDate
0      C0001    Lawrence Carroll  South America  2022-07-10
1      C0002      Elizabeth Lutz           Asia  2022-02-13
2      C0003      Michael Rivera  South America  2024-03-07
3      C0004  Kathleen Rodriguez  South America  2022-10-09
4      C0005         Laura Weber           Asia  2022-08-15
  ProductID              ProductName     Category   Price
0      P001     ActiveWear Biography        Books  169.30
1      P002    ActiveWear Smartwatch  Electronics  346.30
2      P003  ComfortLiving Biography        Books   44.12
3      P004            BookWorld Rug   Home Decor   95.69
4      P005          TechPro T-Shirt     Clothing  429.31
  TransactionID CustomerID ProductID      TransactionDate  Quantity  \
0        T00001      C0199      P067  2024-08-25 12:38:23         1
1        T00112      C0146      P067  2024-05-27 22:23:54         1
2        T00166      C0127      P067  2024-04-25 07:38:55         1
3        T00272      C0087      P067  2024-03-26 22:55:37         2
4        T00363      C0070      P067  2024-03-21 15:10:10         3

   TotalValue   Price
0      300.68  300.68
1      300.68  300.68
2      300.68  300.68
3      601.36  300.68
4      902.04  300.68
```

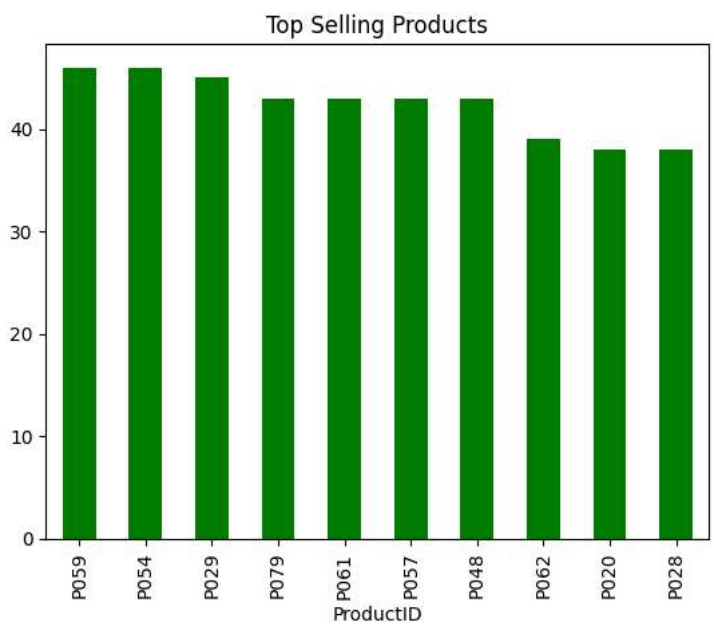
```
# Check for missing values
print(customers.isnull().sum())
print(products.isnull().sum())
print(transactions.isnull().sum())
```

```
CustomerID      0
CustomerName    0
Region          0
SignupDate      0
dtype: int64
ProductID      0
ProductName    0
Category       0
Price          0
dtype: int64
TransactionID      0
CustomerID         0
ProductID          0
TransactionDate    0
Quantity           0
TotalValue         0
Price              0
dtype: int64
```

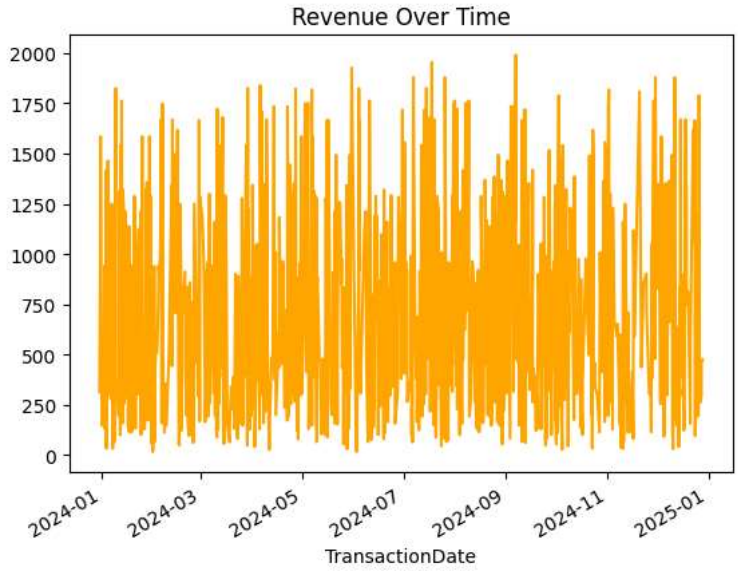
```
# Analyze customer distribution by region
region_counts = customers['Region'].value_counts()
region_counts.plot(kind='bar', title='Customers by Region', color='skyblue')
plt.show()
```




```
# Analyze top-selling products
top_products = transactions.groupby('ProductID')['Quantity'].sum().sort_values(ascending=False).head(10)
top_products.plot(kind='bar', title='Top Selling Products', color='green')
plt.show()
```




```
# Revenue over time
transactions['TransactionDate'] = pd.to_datetime(transactions['TransactionDate'])
revenue_by_date = transactions.groupby('TransactionDate')['TotalValue'].sum()
revenue_by_date.plot(title='Revenue Over Time', color='orange')
plt.show()
```


Revenue Over Time
2000
1750
1500
1250
1000
750
500
250
0
2024-01
2024-03
2024-05
2024-07
2024-09
2024-11
2025-01
TransactionDate