

Lookalike Model

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

# Load datasets
customers = pd.read_csv("/content/Customers.csv")
products = pd.read_csv("/content/Products.csv")
transactions = pd.read_csv("/content/Transactions.csv")
```

Calculate Customer Similarity

```
from sklearn.metrics.pairwise import cosine_similarity

# Merge transactions with customers and products
merged = transactions.merge(customers, on="CustomerID").merge(products, on="ProductID")

# Aggregate data by customer and product
customer_product_matrix = merged.pivot_table(
    index="CustomerID", columns="ProductID", values="Quantity", fill_value=0
)

# Compute cosine similarity
similarity_matrix = cosine_similarity(customer_product_matrix)

import numpy as np

# Get top 3 similar customers for each customer
similarity_df = pd.DataFrame(similarity_matrix, index=customer_product_matrix.index)

lookalikes = {}
for customer_id in similarity_df.index:
    similar_customers = similarity_df[customer_id].sort_values(ascending=False).nlargest(3)
    lookalikes[customer_id] = list(zip(similar_customers.index, similar_customers.values))

# Save to CSV
import csv
with open("FirstName_LastName_Lookalike.csv", "w", newline="") as f:
    writer = csv.writer(f)
    writer.writerow(["CustomerID", "SimilarCustomers"])
    for key, value in lookalikes.items():
        writer.writerow([key, value])
```

