Analyzing customer orders using python

Create Customer Order Data Structure

In [5]:
```
customerOrders = [
    # Customers with both clothir
    ("shankar", "phone", 40.00, '
    ("shankar", "cap", 15.00, "cl
    ("shankar", "usb", 5.00, "ele
    ("shankar", "usb", 5.00, "ele

    ("emma", "headphones", 55.00,
    ("emma", "scarf", 25.00, "clo

    ("ananya", "smartwatch", 130.
    ("ananya", "jacket", 45.00, '

    ("jack", "gamingmouse", 60.00
    ("jack", "TShirt", 20.00, "cl
```

```
    ("liwei", "earbuds", 35.00, '
    ("liwei", "sneakers", 50.00,

    # Clothing only
    ("ravi", "shorts", 15.00, "c
    ("ravi", "hoodie", 25.00, "c

    ("elena", "dress", 70.00, "c
    ("elena", "necklace", 35.00,

    ("sophia", "yoga pants", 40.0
    ("sophia", "tank top", 10.00,

    # Electronics only
    ("jacob", "tablet", 120.00, '
    ("jacob", "charger", 25.00, '

    ("hiroshi", "keyboard", 55.00
    ("hiroshi", "mousepad", 12.00

    # Mixed categories (not cloth
    ("kwame", "blender", 80.00, '
    ("kwame", "towel", 12.00, "ho

    ("fatima", "cookware set", 95
    ("fatima", "journal", 15.00,
]
```

Loop through the list of tuples

In [6]:
```
print("***Customer Orders***")
for customerOrder in customerOrde
    print (customerOrder)
```

```
***Customer Orders***
('shankar', 'phone', 40.0, 'electronics')
('shankar', 'cap', 15.0, 'clothing')
('shankar', 'usb', 5.0, 'electronics')
('shankar', 'usb', 5.0, 'electronics')
('emma', 'headphones', 55.0, 'electronics')
('emma', 'scarf', 25.0, 'clothing')
('ananya', 'smartwatch', 130.0, 'electronics')
('ananya', 'jacket', 45.0, 'clothing')
('jack', 'gamingmouse', 60.0, 'electronics')
('jack', 'TShirt', 20.0, 'clothing')
('liwei', 'earbuds', 35.0, 'electronics')
('liwei', 'sneakers', 50.0, 'clothing')
('ravi', 'shorts', 15.0, 'clothing')
('ravi', 'hoodie', 25.0, 'clothin
```

```
g')
('elena', 'dress', 70.0, 'clothin
g')
('elena', 'necklace', 35.0, 'clot
hing')
('sophia', 'yoga pants', 40.0, 'c
lothing')
('sophia', 'tank top', 10.0, 'clo
thing')
('jacob', 'tablet', 120.0, 'elect
ronics')
('jacob', 'charger', 25.0, 'elect
ronics')
('hiroshi', 'keyboard', 55.0, 'el
ectronics')
('hiroshi', 'mousepad', 12.0, 'el
ectronics')
('kwame', 'blender', 80.0, 'homee
ssentials')
('kwame', 'towel', 12.0, 'homeess
entials')
('fatima', 'cookware set', 95.0,
'homeessentials')
('fatima', 'journal', 15.0, 'stat
ionery')
```

Create a dictionary with customer as key and products as values {"customerName": []}

In [7]:
```
customerProducts= {};
for customerOrder in customerOrde
    customerProducts.setdefault(cu
    customerProducts[customerOrder

print("***Products purchased by c
print(customerProducts)
```

```
***Products purchased by customer
s***
{'shankar': {'phone', 'cap', 'us
b'}, 'emma': {'headphones', 'scar
f'}, 'ananya': {'jacket', 'smartw
atch'}, 'jack': {'TShirt', 'gamin
gmouse'}, 'liwei': {'earbuds', 's
neakers'}, 'ravi': {'hoodie', 'sh
orts'}, 'elena': {'necklace', 'dr
ess'}, 'sophia': {'yoga pants',
'tank top'}, 'jacob': {'tablet',
'charger'}, 'hiroshi': {'keyboar
d', 'mousepad'}, 'kwame': {'towe
l', 'blender'}, 'fatima': {'cookw
are set', 'journal'}}
```

Classify products by category

In [8]:
```
productCategoryDictionary =  {}
for customerOrder in customerOrde
    productCategoryDictionary.set
    productCategoryDictionary[cus

print("***Product Category to pro
```

```
print(productCategoryDictionary)
```

```
***Product Category to product Ma
pping***
{'electronics': {'keyboard', 'hea
dphones', 'tablet', 'usb', 'charg
er', 'mousepad', 'gamingmouse',
'smartwatch', 'phone', 'earbud
s'}, 'clothing': {'yoga pants',
'hoodie', 'dress', 'TShirt', 'jac
ket', 'shorts', 'sneakers', 'tank
top', 'cap', 'scarf', 'necklac
e'}, 'homeessentials': {'cookware
set', 'towel', 'blender'}, 'stati
onery': {'journal'}}
```

Set of unique product categories

In [9]:
```
productCategories = list([item.up
print("***Unique Product Categori
print(productCategories)
```

```
***Unique Product Categories***
['ELECTRONICS', 'CLOTHING', 'HOME
ESSENTIALS', 'STATIONERY']
```

Total Customer Spend and classification

In [10]:
```
customerClassification = {}
for customerOrder in customerOrde

    customerClassification.setde
    value_dict = customerClassifi
    if "categories" not in value_
        value_dict["categories"]

    value_dict["categories"].add(

    customerClassification[custom

for name, values in customerClass
    classification = ""
    if values["totalspend"] > 100
        classification = 'high-va
    elif values["totalspend"] <=
        classification = 'moderat
    else:
          classification = 'low-v

    values["classification"] = cl
    print(f"The customer '{name.u
```

```
print(customerClassification)
```

```
The customer 'SHANKAR' is of 'MOD
ERATE-VALUE'
The customer 'EMMA' is of 'MODERA
TE-VALUE'
The customer 'ANANYA' is of 'HIGH
-VALUE'
The customer 'JACK' is of 'MODERA
TE-VALUE'
The customer 'LIWEI' is of 'MODER
ATE-VALUE'
The customer 'RAVI' is of 'LOW-VA
LUE'
The customer 'ELENA' is of 'HIGH-
VALUE'
The customer 'SOPHIA' is of 'MODE
RATE-VALUE'
The customer 'JACOB' is of 'HIGH-
VALUE'
The customer 'HIROSHI' is of 'MOD
ERATE-VALUE'
The customer 'KWAME' is of 'MODER
ATE-VALUE'
The customer 'FATIMA' is of 'HIGH
-VALUE'
{'shankar': {'totalspend': 65.0,
'classification': 'moderate-valu
e', 'categories': {'electronics',
'clothing'}}, 'emma': {'totalspen
```

```
d': 80.0, 'classification': 'mode
rate-value', 'categories': {'elec
tronics', 'clothing'}}, 'ananya':
{'totalspend': 175.0, 'classifica
tion': 'high-value', 'categorie
s': {'electronics', 'clothing'}},
'jack': {'totalspend': 80.0, 'cla
ssification': 'moderate-value',
'categories': {'electronics', 'cl
othing'}}, 'liwei': {'totalspen
d': 85.0, 'classification': 'mode
rate-value', 'categories': {'elec
tronics', 'clothing'}}, 'ravi':
{'totalspend': 40.0, 'classificat
ion': 'low-value', 'categories':
{'clothing'}}, 'elena': {'totalsp
end': 105.0, 'classification': 'h
igh-value', 'categories': {'cloth
ing'}}, 'sophia': {'totalspend':
50.0, 'classification': 'moderate
-value', 'categories': {'clothin
g'}}, 'jacob': {'totalspend': 14
5.0, 'classification': 'high-valu
e', 'categories': {'electronic
s'}}, 'hiroshi': {'totalspend': 6
7.0, 'classification': 'moderate-
value', 'categories': {'electroni
cs'}}, 'kwame': {'totalspend': 9
```

```
2.0, 'classification': 'moderate-
value', 'categories': {'homeessen
tials'}}, 'fatima': {'totalspen
d': 110.0, 'classification': 'hig
h-value', 'categories': {'station
ery', 'homeessentials'}}}
```

Unique product list

In [11]:
```
productList = list([product.upper
print(productList)
```

```
['KEYBOARD', 'HEADPHONES', 'TABLE
T', 'USB', 'CHARGER', 'MOUSEPAD',
'GAMINGMOUSE', 'SMARTWATCH', 'PHO
NE', 'EARBUDS', 'YOGA PANTS', 'HO
ODIE', 'DRESS', 'TSHIRT', 'JACKE
T', 'SHORTS', 'SNEAKERS', 'TANK T
OP', 'CAP', 'SCARF', 'NECKLACE',
'COOKWARE SET', 'TOWEL', 'BLENDE
R', 'JOURNAL']
```

In [ ]:
```

```

Total revenue by product category

In [12]:
```
revenueProductCategory = {}

for customerOrder in customerOrde
    revenueProductCategory.setde
    revenueProductCategory[custom

print(revenueProductCategory)
```

```
{'electronics': 542.0, 'clothin
g': 350.0, 'homeessentials': 187.
0, 'stationery': 15.0}
```

Customers who purchased electronics products.

In [13]:
```
electronicCustomers = set([ custo
print(electronicCustomers)
```

```
{'HIROSHI', 'JACOB', 'JACK', 'LIW
EI', 'ANANYA', 'SHANKAR', 'EMMA'}
```

Top three highest-spending customers using sorting.

In [14]:
```
customersWithSpending = (sorted(c
print (customersWithSpending[:3])
i = 1
for customer in customersWithSper
    print(f"Number {i} spender is
    i = i+1
```

```
[('ananya', {'totalspend': 175.0,
'classification': 'high-value',
'categories': {'electronics', 'cl
othing'}}), ('jacob', {'totalspen
d': 145.0, 'classification': 'hig
h-value', 'categories': {'electro
nics'}}), ('fatima', {'totalspen
d': 110.0, 'classification': 'hig
h-value', 'categories': {'station
ery', 'homeessentials'}})]
Number 1 spender is ANANYA
Number 2 spender is JACOB
Number 3 spender is FATIMA
```

Organize and display data

In [15]:
```
print("----------------------------
print("----------------------------

print("***Summary of each custome
print("----------------------------


customerwithMultipleCategories =
customersWithClothingandElectroni
for customer in customersWithSper
    customerName = customer[0]
    classification = (customer[1]
    totalSpend = (customer[1])["t
    categories = (customer[1])["c
    if(len(categories) > 1):
        customerwithMultipleCateg
        if("electronics" in categ
            (customerwithMultiple
        else:
            (customerwithMultiple
```

```
    print(f"The customer '{custom

print("-------------------------
print("-------------------------
print("***Customers who purchased
print("-------------------------

#print(customerwithMultipleCatego
for key,value_dict  in customerwi
    categories = value_dict["cate
    print(f" The customer '{key.u

print("-------------------------
print("-------------------------
print("***Common customers who bo
print("-------------------------

customersWithClothingandElectroni

for customer in customersWithClot
    print(customer)
#print(customersWithClothingandEl

#customersWithClothingandElectror
```

```
---------------------------------
---------------------------------
---------------------------------
---------------------------------
***Summary of each customer’s tot
al spending and their classificat
ion***
---------------------------------
---------------------------------
The customer 'ANANYA' classified
as 'HIGH-VALUE' spent 175.0
The customer 'JACOB' classified a
s 'HIGH-VALUE' spent 145.0
The customer 'FATIMA' classified
as 'HIGH-VALUE' spent 110.0
The customer 'ELENA' classified a
s 'HIGH-VALUE' spent 105.0
The customer 'KWAME' classified a
s 'MODERATE-VALUE' spent 92.0
The customer 'LIWEI' classified a
s 'MODERATE-VALUE' spent 85.0
The customer 'EMMA' classified as
'MODERATE-VALUE' spent 80.0
The customer 'JACK' classified as
'MODERATE-VALUE' spent 80.0
The customer 'HIROSHI' classified
as 'MODERATE-VALUE' spent 67.0
The customer 'SHANKAR' classified
```

```
as 'MODERATE-VALUE' spent 65.0
The customer 'SOPHIA' classified
as 'MODERATE-VALUE' spent 50.0
The customer 'RAVI' classified as
'LOW-VALUE' spent 40.0
--------------------------------
--------------------------------
--------------------------------
--------------------------------
***Customers who purchased from m
ultiple product categories***
--------------------------------
--------------------------------
 The customer 'ANANYA' purchased
in categories {'electronics', 'cl
othing'}
 The customer 'FATIMA' purchased
in categories {'stationery', 'hom
eessentials'}
 The customer 'LIWEI' purchased i
n categories {'electronics', 'clo
thing'}
 The customer 'EMMA' purchased in
categories {'electronics', 'cloth
ing'}
 The customer 'JACK' purchased in
categories {'electronics', 'cloth
ing'}
```

```
 The customer 'SHANKAR' purchased in categories {'electronics', 'clothing'}
-------------------------------------------------------------------------
-------------------------------------------------------------------------
***Common customers who bought both electronics and clothing***
-------------------------------------------------------------------------
-------------------------------------------------------------------------
ANANYA
LIWEI
EMMA
JACK
SHANKAR
```