Here is coding:

import pandas as pd

import numpy as np

file\_to\_load = "purchase\_data.csv"

purchase\_data = pd.read\_csv(file\_to\_load)

purchase\_data.head()

#Display the total number of players

a=len(purchase\_data["SN"].unique())

Player\_count=["Total Players",a]

Player\_count=pd.DataFrame(Player\_count, columns=["Total Players"])

Player\_count

#Purchasing Analysis (Total)

#Run basic calculations to obtain number of unique items, average price, etc.

#Create a summary data frame to hold the results

#Optional: give the displayed data cleaner formatting

#Display the summary data frame

items=len(purchase\_data["Item ID"].unique())

AvePrice=round(purchase\_data["Price"].mean(),2)

NumPurchases=len(purchase\_data["Purchase ID"].unique())

TotalRev=purchase\_data["Price"].sum()

Purchasing\_Analysis=[{"Number of Purchases":NumPurchases,"Number of Unique Items":items,"Average Price":'${:,.2f}'.format(AvePrice),

"Total Revenue":'${:,.2f}'.format(TotalRev)}]

tabble\_PricePurchasing\_Analysis=pd.DataFrame(Purchasing\_Analysis,columns=["Number of Unique Items","Average Price",

"Number of Purchases","Total Revenue"])

tabble\_PricePurchasing\_Analysis

#Gender Demographics

total\_players=len(purchase\_data["SN"].unique())

#Percentage and Count of Male Players

num\_male=purchase\_data.loc[purchase\_data["Gender"]=="Male",:]

num\_male[["SN","Gender"]].set\_index("SN")

final\_num\_male=len(num\_male["SN"].unique())

per\_male=final\_num\_male/total\_players

per\_male='{0:.2%}'.format(per\_male)

#Percentage and Count of Female Players

num\_female=purchase\_data.loc[purchase\_data["Gender"]=="Female",:]

num\_female[["SN","Gender"]].set\_index("SN")

final\_num\_female=len(num\_female["SN"].unique())

per\_female=final\_num\_female/total\_players

per\_female='{0:.2%}'.format(per\_female)

#Percentage and Count of Other / Non-Disclosed

Others=total\_players-(final\_num\_female+final\_num\_male)

per\_Others=Others/total\_players

per\_Others='{0:.2%}'.format(per\_Others)

#Gender Demographics

Gender\_Demographics=pd.DataFrame({" ":["Male","Female","Other / Non-Disclosed"],

"Total Count":[final\_num\_male,final\_num\_female,Others],

"Percentage of Players":[per\_male,per\_female,per\_Others]})

Gender\_Demographics.set\_index(' ', inplace=True)

Gender\_Demographics

#Male

pru\_count\_male=purchase\_data.loc[purchase\_data["Gender"]=="Male",:]

male\_count=pru\_count\_male["SN"].count()

total\_pur\_male=sum(pru\_count\_male["Price"])

ave\_price\_male=pru\_count\_male["Price"].mean()

ave\_perperson\_male=pru\_count\_male[["Price","SN"]]

ave\_tpp\_male=ave\_perperson\_male.groupby("SN").sum()

ave\_tpp\_male=ave\_tpp\_male["Price"].mean()

ave\_tpp\_male

#Female

pru\_count\_female=purchase\_data.loc[purchase\_data["Gender"]=="Female",:]

female\_count=pru\_count\_female["SN"].count()

total\_pur\_female=sum(pru\_count\_female["Price"])

ave\_price\_female=pru\_count\_female["Price"].mean()

ave\_perperson\_female=pru\_count\_female[["Price","SN"]]

ave\_tpp\_female=ave\_perperson\_female.groupby("SN").sum()

ave\_tpp\_female=ave\_tpp\_female["Price"].mean()

#Other

pru\_count\_other=purchase\_data.loc[purchase\_data["Gender"]=="Other / Non-Disclosed",:]

others=len(purchase\_data["Gender"])-female\_count-male\_count

total\_pur\_other=sum(purchase\_data["Price"])-total\_pur\_female-total\_pur\_male

ave\_price\_other=pru\_count\_other["Price"].mean()

ave\_perperson\_other=pru\_count\_other[["Price","SN"]]

ave\_tpp\_other=ave\_perperson\_other.groupby("SN").sum()

ave\_tpp\_other=ave\_tpp\_other["Price"].mean()

#Table

Purchasing\_Analysis\_Gender=pd.DataFrame({" ":["Gender","Female","Male","Other / Non-Disclosed"],

"Purchase Count":[" ",female\_count,male\_count,others],

"Average Purchase Price":[" ",'${:,.2f}'.format(ave\_price\_female),'${:,.2f}'.format(ave\_price\_male),'${:,.2f}'.format(ave\_price\_other)],

"Total Purchase Value":[" ",'${:,.2f}'.format(total\_pur\_female),'${:,.2f}'.format(total\_pur\_male),'${:,.2f}'.format(total\_pur\_other)],

"Avg Total Purchase per Person":[" ",'${:,.2f}'.format(ave\_tpp\_female),'${:,.2f}'.format(ave\_tpp\_male),'${:,.2f}'.format(ave\_tpp\_other)]

})

Purchasing\_Analysis\_Gender

Purchasing\_Analysis\_Gender.set\_index(' ', inplace=True)

Purchasing\_Analysis\_Gender

import pandas as pd

file\_to\_load = "purchase\_data.csv"

purchase\_data = pd.read\_csv(file\_to\_load)

purchase\_data.head()

#Age Demographics

total\_players=len(purchase\_data["SN"].unique())

purchase\_data=purchase\_data[["SN","Age","Gender"]]

purchase\_data.drop\_duplicates(keep="first",inplace=True)

bins=[0,9, 14,19,24,29,34,39,100]

age\_groups=["<10","10-14","15-19","20-24","25-29","30-34","35-39","40+"]

purchase\_data[" "]=pd.cut(purchase\_data["Age"],bins,

labels=age\_groups,include\_lowest=True)

count\_groups=purchase\_data.groupby([" "]).count()

count\_groups["Total Count"]=count\_groups["SN"]

count\_groups["Percentage of Players"]=count\_groups["SN"]/total\_players

count\_groups\_demographics=pd.DataFrame({

"Total Count":count\_groups["Total Count"],

"Percentage of Players":['{0:.2%}'.format(x) for x in count\_groups["Percentage of Players"]]})

count\_groups\_demographics

#Purchasing Analysis (Age)

#Bin the purchase\_data data frame by age

#Run basic calculations to obtain purchase count, avg. purchase price, avg. purchase total per person etc. in the table below

#Create a summary data frame to hold the results

#Optional: give the displayed data cleaner formatting

#Display the summary data frame

import pandas as pd

file\_to\_load = "purchase\_data.csv"

purchase\_data = pd.read\_csv(file\_to\_load)

purchase\_data.head()

bins=[0,9, 14,19,24,29,34,39,100]

age\_groups=["<10","10-14","15-19","20-24","25-29","30-34","35-39","40+"]

purchase\_data["Age Ranges"]=pd.cut(purchase\_data["Age"],bins,

labels=age\_groups,include\_lowest=True)

purchase\_data\_grouped=purchase\_data.groupby("Age Ranges")

purchase\_count=purchase\_data\_grouped["Purchase ID"].count()

Average\_Purchase\_Price=purchase\_data\_grouped["Price"].mean()

Total\_Purchase\_Value=purchase\_data\_grouped["Price"].sum()

purchase\_data\_dd\_grouped=purchase\_data.groupby(["Age Ranges","SN"])

purchase\_data\_dd\_grouped\_sum=purchase\_data\_dd\_grouped["Price"].sum()

Avg\_Total\_Purchase\_pp=purchase\_data\_dd\_grouped\_sum.groupby("Age Ranges").mean()

Average\_Purchase\_Price\_new=[]

for x in Average\_Purchase\_Price:

x='${:,.2f}'.format(x)

Average\_Purchase\_Price\_new.append(x)

Total\_Purchase\_Value\_new=[]

for y in Total\_Purchase\_Value:

y='${:,.2f}'.format(y)

Total\_Purchase\_Value\_new.append(y)

Avg\_Total\_Purchase\_pp\_new=[]

for z in Avg\_Total\_Purchase\_pp:

z='${:,.2f}'.format(z)

Avg\_Total\_Purchase\_pp\_new.append(z)

#Table

Purchasing\_Analysis\_Age=pd.DataFrame({

"Purchase Count":purchase\_count,

"Average Purchase Price":Average\_Purchase\_Price\_new,

"Total Purchase Value":Total\_Purchase\_Value\_new,

"Avg Total Purchase per Person":Avg\_Total\_Purchase\_pp\_new

})

Purchasing\_Analysis\_Age

#Top Spenders

#Run basic calculations to obtain the results in the table below

#Create a summary data frame to hold the results

#Sort the total purchase value column in descending order

#Optional: give the displayed data cleaner formatting

#Display a preview of the summary data frame

import pandas as pd

file\_to\_load = "purchase\_data.csv"

purchase\_data = pd.read\_csv(file\_to\_load)

purchase\_data.head()

purchase\_data\_sn\_group=purchase\_data.groupby("SN")

Purchase\_Count=purchase\_data\_sn\_group["Purchase ID"].count()

Total\_Purchase\_Value=purchase\_data\_sn\_group["Price"].sum()

Average\_Purchase\_Price=purchase\_data\_sn\_group["Price"].mean()

Average\_Purchase\_Price\_New=[]

for x in Average\_Purchase\_Price:

x='${:,.2f}'.format(x)

Average\_Purchase\_Price\_New.append(x)

Total\_Purchase\_Value\_New=[]

for z in Total\_Purchase\_Value:

z='${:,.2f}'.format(z)

Total\_Purchase\_Value\_New.append(z)

table=pd.DataFrame({"Purchase Count":Purchase\_Count,

"Average Purchase Price":Average\_Purchase\_Price\_New,

"Total\_Purchase Value":Total\_Purchase\_Value,"Total Purchase Value":Total\_Purchase\_Value\_New})

table\_final=table.sort\_values("Total\_Purchase Value",ascending=False)

table\_final=table\_final[["Purchase Count","Average Purchase Price","Total Purchase Value"]]

most5=table\_final[0:5]

most5

#Most Popular Items

#Retrieve the Item ID, Item Name, and Item Price columns

#Group by Item ID and Item Name. Perform calculations to obtain purchase count, item price, and total purchase value

#Create a summary data frame to hold the results

#Sort the purchase count column in descending order

#Optional: give the displayed data cleaner formatting

#Display a preview of the summary data frame

import pandas as pd

file\_to\_load = "purchase\_data.csv"

purchase\_data = pd.read\_csv(file\_to\_load)

purchase\_data.head()

purchase\_group\_item=purchase\_data.groupby(["Item ID","Item Name"])

Purchase\_Count=purchase\_group\_item["Purchase ID"].count()

Total\_Purchase\_Value=purchase\_group\_item["Price"].sum()

Item\_Price=Total\_Purchase\_Value/Purchase\_Count

Item\_Price\_new=[]

for z in Item\_Price:

z='${:,.2f}'.format(z)

Item\_Price\_new.append(z)

Total\_Purchase\_Value\_New=[]

for x in Total\_Purchase\_Value:

x='${:,.2f}'.format(x)

Total\_Purchase\_Value\_New.append(x)

table\_item=pd.DataFrame({"Purchase Count":Purchase\_Count,"Item Price":Item\_Price\_new,"Total Purchase Value":Total\_Purchase\_Value\_New})

table\_final\_item=table\_item.sort\_values("Purchase Count",ascending=False)

top5=table\_final\_item[0:5]

top5

#Most Profitable Items

#Sort the above table by total purchase value in descending order

#Optional: give the displayed data cleaner formatting

#Display a preview of the data frame

import pandas as pd

file\_to\_load = "purchase\_data.csv"

purchase\_data = pd.read\_csv(file\_to\_load)

purchase\_data.head()

purchase\_group\_item=purchase\_data.groupby(["Item ID","Item Name"])

Purchase\_Count=purchase\_group\_item["Purchase ID"].count()

Total\_Purchase\_Value=purchase\_group\_item["Price"].sum()

Item\_Price=Total\_Purchase\_Value/Purchase\_Count

Item\_Price\_new=[]

for z in Item\_Price:

z='${:,.2f}'.format(z)

Item\_Price\_new.append(z)

Total\_Purchase\_Value\_New=[]

for x in Total\_Purchase\_Value:

x='${:,.2f}'.format(x)

Total\_Purchase\_Value\_New.append(x)

table\_item=pd.DataFrame({"Purchase Count":Purchase\_Count,"Item Price":Item\_Price\_new,"Total Purchase Value":Total\_Purchase\_Value})

table\_profit=table\_item.sort\_values("Total Purchase Value",ascending=False)

table\_profit['Total Purchase Value'] = table\_profit['Total Purchase Value'].map('${:,.2f}'.format)

top=table\_profit[0:5]

top