**Aim:** Working over Tableau

**IDE:** Microsoft Excel, Tableau

**Pre-Requisites:-**  Insert the Customer’s Full Name, Gender, City, and Country From the Customer Sheet Using VLOOKUP

Function In Order Dataset In Excel Itself on the Basis of Customer ID.

**Now Import Necessary Libraries for Analysis:-**

import pandas as pd

import numpy as np

import seaborn as sns

import matplotlib.pyplot as plt

Dataset = pd.read\_excel("D:/Aryan Data/Usefull Data/Semester - 4/Data Visulization and Dashboards/Assigments/Assignment 4 working over Python/excel\_pivots.xlsx" , 'Orders')

Dataset['Order\_Date'] = pd.to\_datetime(Dataset['Order\_Date'])

Dataset["Year"] = Dataset["Order\_Date"].dt.year

Dataset["Quater"] = Dataset["Order\_Date"].dt.quarter

Dataset["Month"] = Dataset["Order\_Date"].dt.month

**Questions:**

1. **Average "total cost" and count of the product 1 under normal order category**

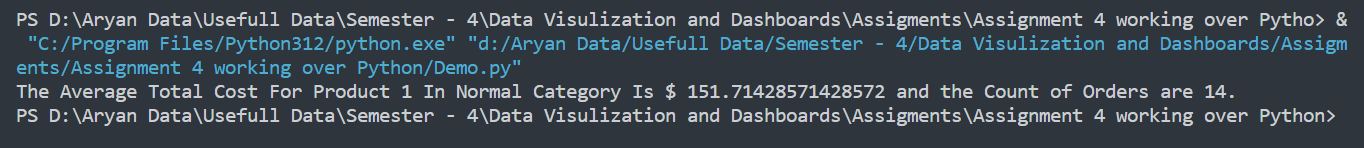
**Code:-**

Order\_With\_Normal\_Category\_of\_Product\_1 = Dataset[(Dataset["Order\_Category"] == "Normal Order")& (Dataset["Product\_#"] == "Product 1")]

Count\_of\_Order\_With\_Normal\_Category\_of\_Product\_1 = Order\_With\_Normal\_Category\_of\_Product\_1.shape[0]

Average\_Total\_Cost\_of\_Order\_With\_Normal\_Category\_of\_Product\_1 = Order\_With\_Normal\_Category\_of\_Product\_1["Total\_Cost"].mean()

print(f"The Average Total Cost For Product 1 In Normal Category Is $ {Average\_Total\_Cost\_of\_Order\_With\_Normal\_Category\_of\_Product\_1} and the Count of Orders are {Count\_of\_Order\_With\_Normal\_Category\_of\_Product\_1}.")

**Output:-**

1. **Average "total cost" and count of product 1 under the short order category**

**Code :-**

Order\_With\_Small\_Category\_of\_Product\_1 = Dataset[

(Dataset["Order\_Category"] == "Small Order") & (Dataset["Product\_#"] == "Product 1")

]

Count\_of\_Order\_With\_Small\_Category\_of\_Product\_1 = (

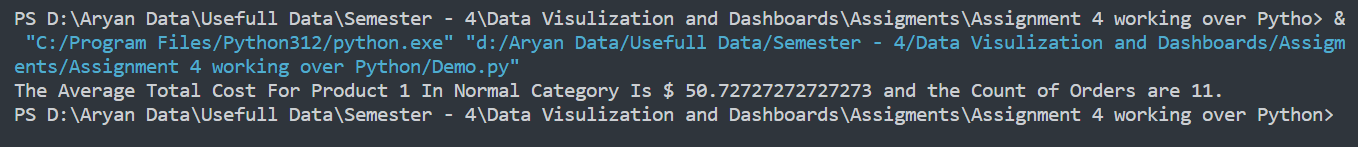
Order\_With\_Small\_Category\_of\_Product\_1.shape[0]

)

Average\_Total\_Cost\_Order\_With\_Small\_Category\_of\_Product\_1 = (

Order\_With\_Small\_Category\_of\_Product\_1["Total\_Cost"].mean()

)

**Output :-**

1. **Average "total cost" and count of product 1 under the large order category**

**Code :-**

Order\_With\_Large\_Category\_of\_Product\_1 = Dataset[

(Dataset["Order\_Category"] == "Large Order") & (Dataset["Product\_#"] == "Product 1")

]

Count\_of\_Order\_With\_Large\_Category\_of\_Product\_1 = (

Order\_With\_Large\_Category\_of\_Product\_1.shape[0]

)

Average\_Total\_Cost\_Order\_With\_Large\_Category\_of\_Product\_1 = (

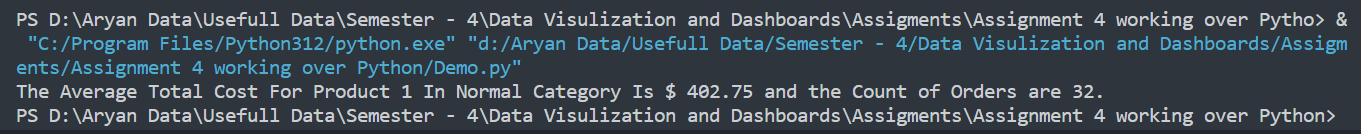
Order\_With\_Large\_Category\_of\_Product\_1["Total\_Cost"].mean()

)

print(

f"The Average Total Cost For Product 1 In Normal Category Is $ {Average\_Total\_Cost\_Order\_With\_Large\_Category\_of\_Product\_1} and the Count of Orders are {Count\_of\_Order\_With\_Large\_Category\_of\_Product\_1}."

)

**Output :-**

1. **Which month has the highest count of orders placed?**

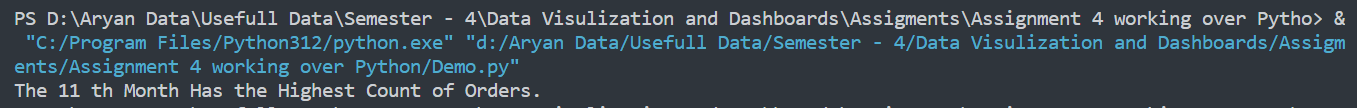
**Code :-**

Dataset["Order\_Date"] = pd.to\_datetime(Dataset["Order\_Date"])

Dataset["Month"] = Dataset["Order\_Date"].dt.month

Month\_Having\_Highest\_Count = Dataset["Month"].mode()[0]

print(f"The {Month\_Having\_Highest\_Count} th Month Has the Highest Count of Orders.")

**Output :-**

1. **Which year has the highest "average total cost"?**

**Code :-**

Dataset["Order\_Date"] = pd.to\_datetime(Dataset["Order\_Date"])

Dataset["Year"] = Dataset["Order\_Date"].dt.year

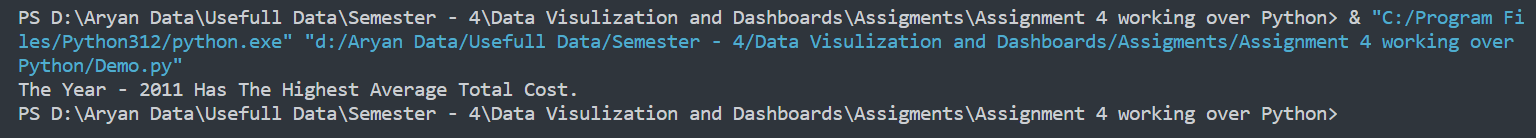
Year\_Wise\_Average\_Total\_Cost = Dataset.groupby("Year")["Total\_Cost"].mean()

Year\_Having\_Highest\_Average\_Total\_Cost = Year\_Wise\_Average\_Total\_Cost.idxmax()

print(

f"The Year - {Year\_Having\_Highest\_Average\_Total\_Cost} Has The Highest Average Total Cost."

)

**Output :-**

1. **What is the ratio of the number of orders placed by males and females?**

**Code :-**

Orders\_Given\_By\_Male\_Customers = Dataset[(Dataset["Gender"] == "Male")]

Orders\_Given\_By\_Female\_Customers = Dataset[(Dataset["Gender"] == "Female")]

Count\_of\_Orders\_Given\_By\_Male\_Customers = Orders\_Given\_By\_Male\_Customers.shape[0]

Count\_of\_Orders\_Given\_By\_Female\_Customers = Orders\_Given\_By\_Female\_Customers.shape[0]

Ratio\_of\_Count\_of\_Orders\_Given\_By\_Males = (

Count\_of\_Orders\_Given\_By\_Male\_Customers / Dataset.shape[0]

) \* 100

Ratio\_of\_Count\_of\_Orders\_Given\_By\_Females = (

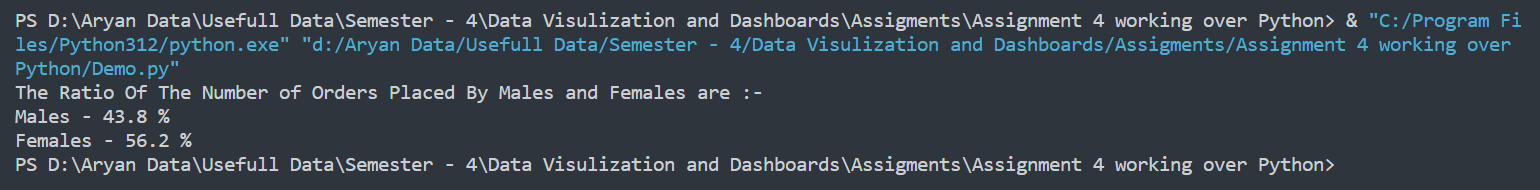
Count\_of\_Orders\_Given\_By\_Female\_Customers / Dataset.shape[0]

) \* 100

print(

f"The Ratio Of The Number of Orders Placed By Males and Females are :-\nMales - {Ratio\_of\_Count\_of\_Orders\_Given\_By\_Males} %\nFemales - {Ratio\_of\_Count\_of\_Orders\_Given\_By\_Females} %"

)

**Output:-**

1. **What is the ratio of the total cost of the orders placed by males and females?**

**Code :-**

Orders\_Given\_By\_Male\_Customers = Dataset[(Dataset["Gender"] == "Male")]

Orders\_Given\_By\_Female\_Customers = Dataset[(Dataset["Gender"] == "Female")]

Total\_Cost\_of\_Orders\_Given\_By\_Males = Orders\_Given\_By\_Male\_Customers["Total\_Cost"].sum()

Total\_Cost\_of\_Orders\_Given\_By\_Females = Orders\_Given\_By\_Female\_Customers[

"Total\_Cost"

].sum()

Ratio\_of\_Total\_Cost\_of\_Orders\_Given\_By\_Males = (

Total\_Cost\_of\_Orders\_Given\_By\_Males / Dataset["Total\_Cost"].sum()

) \* 100

Ratio\_of\_Total\_Cost\_of\_Orders\_Given\_By\_Females = (

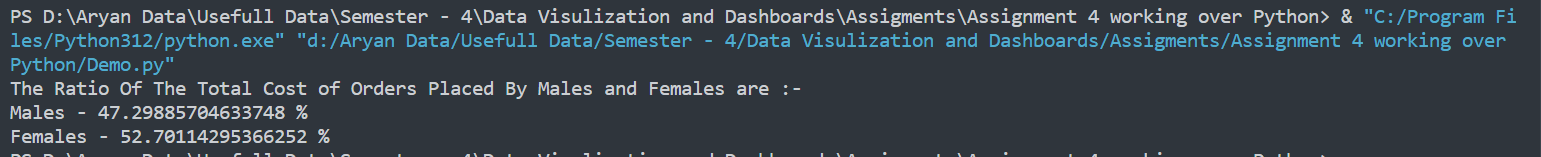
Total\_Cost\_of\_Orders\_Given\_By\_Females / Dataset["Total\_Cost"].sum()

) \* 100

print(

f"The Ratio Of The Total Cost of Orders Placed By Males and Females are :-\nMales - {Ratio\_of\_Total\_Cost\_of\_Orders\_Given\_By\_Males} %\nFemales - {Ratio\_of\_Total\_Cost\_of\_Orders\_Given\_By\_Females} %"

)

**Output :-**

1. **How many orders are placed under each order category for the country "INDIA"?**

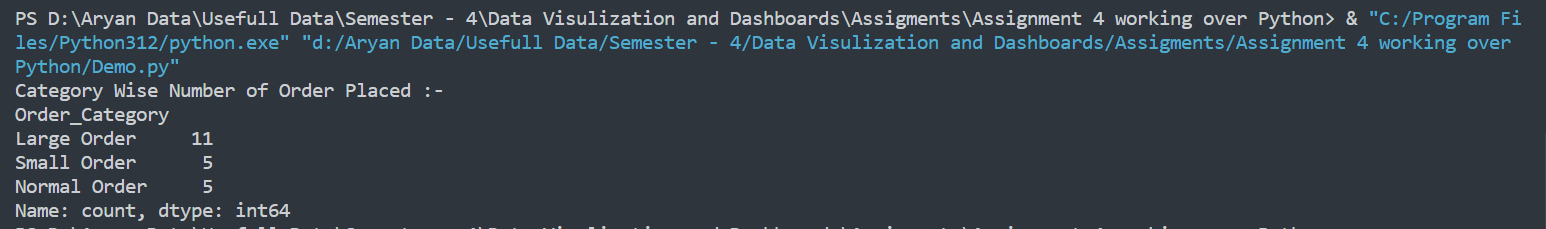
**Code :-**

Orders\_Placed\_In\_India = Dataset[Dataset["Country"] == "India"][

"Order\_Category"

].value\_counts()

print(f"Category Wise Number of Order Placed :-\n{Orders\_Placed\_In\_India}")

**Output :-**

1. **What is the total cost of the order placed by the customer "Willis Brinks"?**

**Code :-**

Order\_Placed\_By\_Willis\_Brinks = Dataset[Dataset["Full\_Name"] == "Willis Brinks"]

Total\_Cost\_of\_Orders\_by\_Willis\_Brinks = Order\_Placed\_By\_Willis\_Brinks[

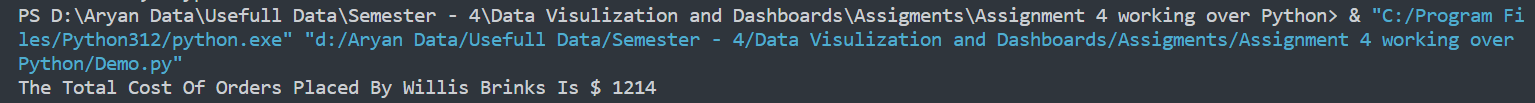
"Total\_Cost"

].sum()

print(

f"The Total Cost Of Orders Placed By Willis Brinks Is $ {Total\_Cost\_of\_Orders\_by\_Willis\_Brinks}"

)

**Output :-**

1. **Name the customer who has placed the order with the highest amount.**

**Code :-**

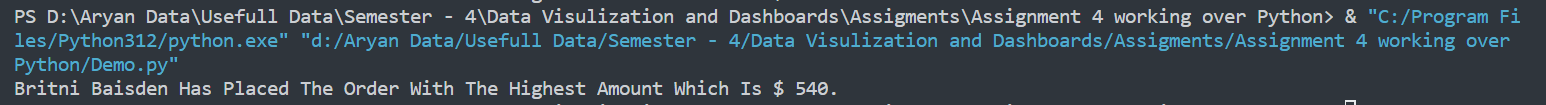
Name\_of\_Highest\_Amount\_Order = Dataset.loc[Dataset["Total\_Cost"].idxmax(), "Full\_Name"]

Order\_Value = Dataset.loc[Dataset["Total\_Cost"].idxmax(), "Total\_Cost"]

print(

f"{Name\_of\_Highest\_Amount\_Order} Has Placed The Order With The Highest Amount Which Is $ {Order\_Value}."

)

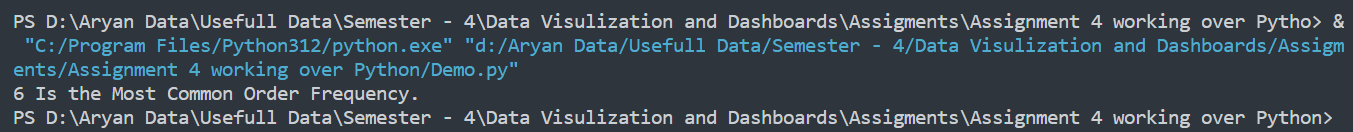
**Output :-**

1. **What is the most common order quantity?**

**Code :-**

Most\_Common\_Order\_Quantity = Dataset["Quantity"].mode()[0]

print(f"{Most\_Common\_Order\_Quantity} Is the Most Common Order Frequency.")

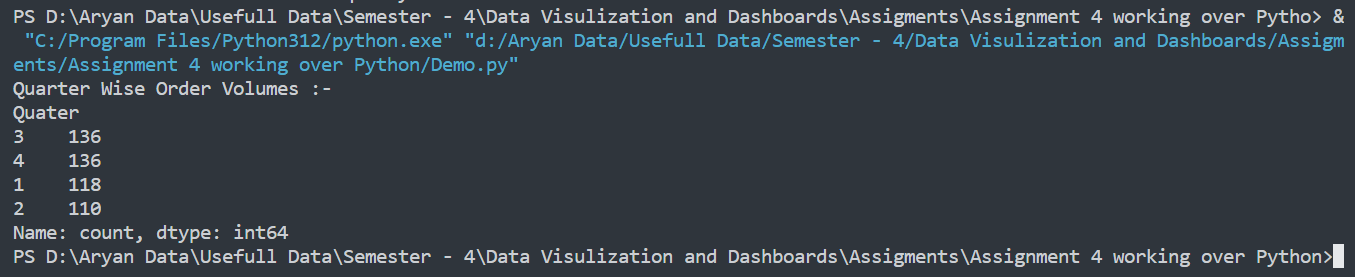
**Output :-**

1. **Are there specific quarters with higher order volumes?**

**Code:-**

Quater\_Wise\_Order = Dataset["Quater"].value\_counts()

print(f"Quarter Wise Order Volumes :-\n{Quater\_Wise\_Order}")

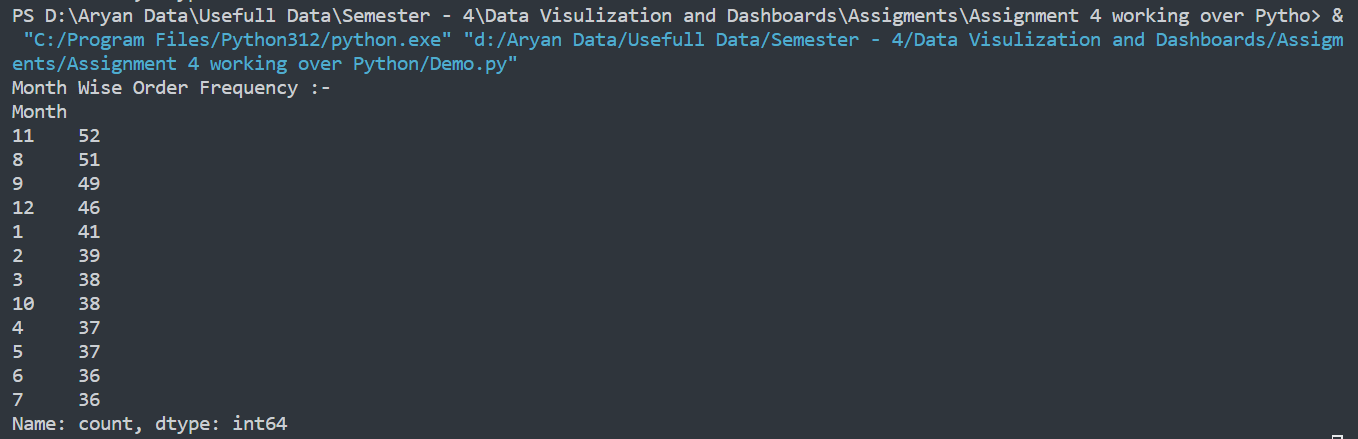
**Output :-**

1. **How does order frequency vary over the month?**

**Code :-**

Month\_Wise\_Order = Dataset["Month"].value\_counts()

print(f"Month Wise Order Frequency :-\n{Month\_Wise\_Order}")

**Output :-**

1. **Are there certain categories contributing more to revenue?**

**Code :-**

Total\_Revenue = Dataset["Total\_Cost"].sum()

Total\_Revenue\_From\_Small\_Category = (

Dataset[(Dataset["Order\_Category"] == "Small Order")]["Total\_Cost"].sum()

/ Total\_Revenue

) \* 100

Total\_Revenue\_From\_Normal\_Category = (

Dataset[(Dataset["Order\_Category"] == "Normal Order")]["Total\_Cost"].sum()

/ Total\_Revenue

) \* 100

Total\_Revenue\_From\_Large\_Category = (

Dataset[(Dataset["Order\_Category"] == "Large Order")]["Total\_Cost"].sum()

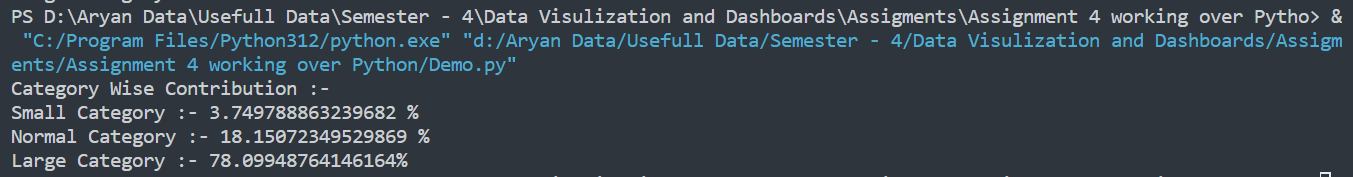
/ Total\_Revenue

) \* 100

print(

f"Category Wise Contribution :-\nSmall Category :- {Total\_Revenue\_From\_Small\_Category} %\nNormal Category :- {Total\_Revenue\_From\_Normal\_Category} %\nLarge Category :- {Total\_Revenue\_From\_Large\_Category}%"

)

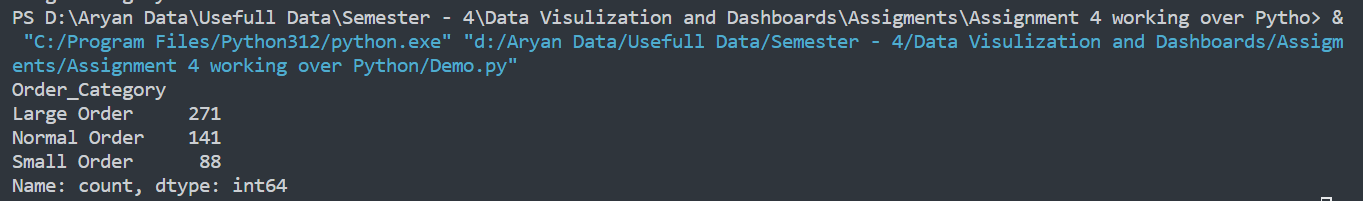
**Output :-**

1. **What is the distribution of orders across different order categories?**

**Code :-**

Cateory\_Wise\_Distribution = Dataset["Order\_Category"].value\_counts()

print(Cateory\_Wise\_Distribution)

**Output :-**

1. **Can you identify the most common product purchased in large orders?**

**Code :-**

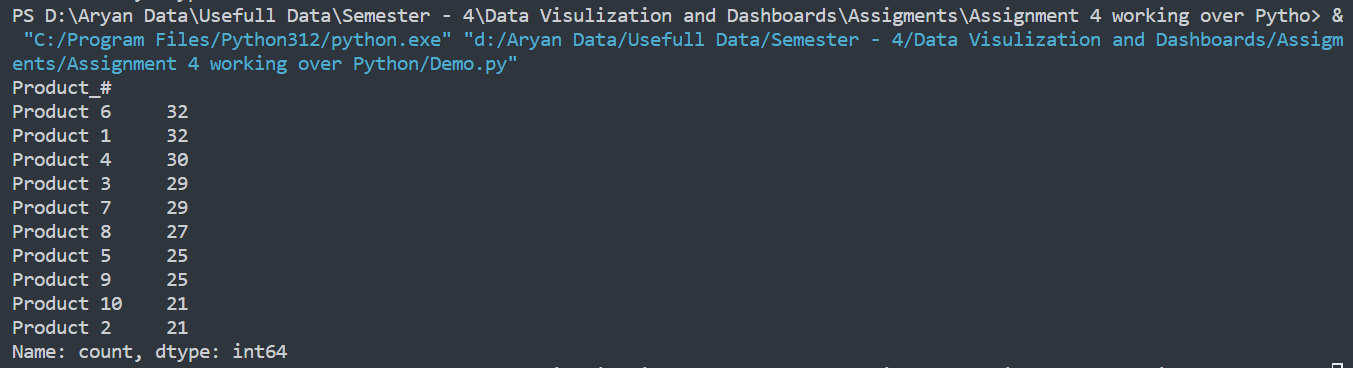
Order\_With\_Large\_Category = Dataset[(Dataset["Order\_Category"] == "Large Order")]

Product\_Distribution\_In\_Large\_Orders = Order\_With\_Large\_Category[

"Product\_#"

].value\_counts()

print(Product\_Distribution\_In\_Large\_Orders)

**Output:-**

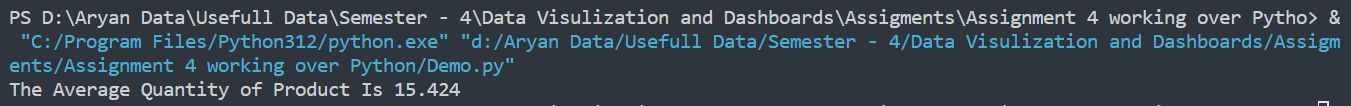
1. **What is the average quantity of products per order?**

**Code :-**

Average\_Quantity = Dataset["Quantity"].mean()

print(Average\_Quantity)

**Output :-**

****

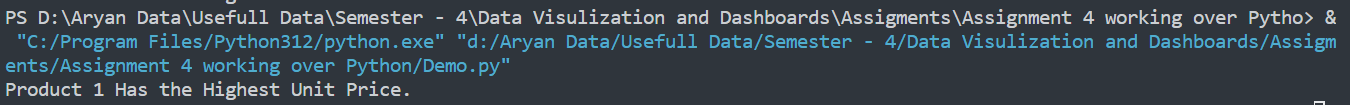
1. **Which product has the highest unit price?**

**Code :-**

Product\_With\_Highest\_Unit\_Price = Dataset.loc[

Dataset["Unit\_Price"].idxmax(), "Product\_#"]

print(Product\_With\_Highest\_Unit\_Price)

**Output :-**

1. **What is the total revenue generated from large orders versus normal orders?**

**Code :-**

Total\_Revenue = Dataset["Total\_Cost"].sum()

Total\_Revenue\_From\_Normal\_Category = (

Dataset[(Dataset["Order\_Category"] == "Normal Order")]["Total\_Cost"].sum()

/ Total\_Revenue

) \* 100

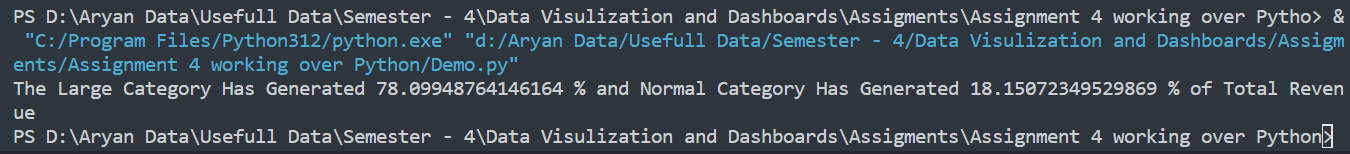
Total\_Revenue\_From\_Large\_Category = (

Dataset[(Dataset["Order\_Category"] == "Large Order")]["Total\_Cost"].sum()

/ Total\_Revenue

) \* 100

print(f"The Large Category Has Generated {Total\_Revenue\_From\_Large\_Category} % and Normal Category Has Generated {Total\_Revenue\_From\_Normal\_Category} % of Total Revenue")

**Output :-**

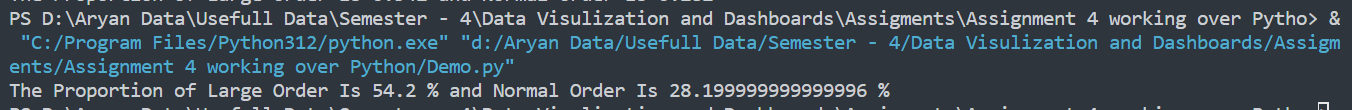
1. **What is the proportion of large orders to normal orders in the dataset?**

**Code :-**

Order\_With\_Large\_Category = Dataset[(Dataset["Order\_Category"] == "Large Order")]

Order\_With\_Normal\_Category = Dataset[(Dataset["Order\_Category"] == "Normal Order")]

print(f"The Proportion of Large Order Is {(Order\_With\_Large\_Category.shape[0] / Dataset.shape[0]) \* 100} % and Normal Order Is {(Order\_With\_Normal\_Category.shape[0] / Dataset.shape[0]) \* 100} %")

**Output :-**

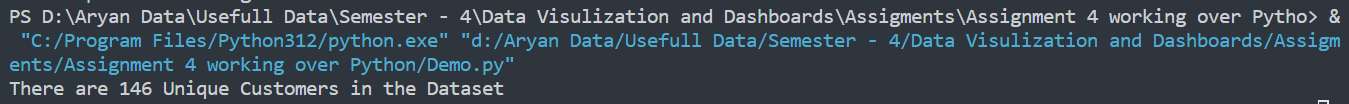
1. **How many unique customers are represented in the dataset?**

**Code :-**

Unique\_Customers = list(set(Dataset["Full\_Name"]))

No\_of\_Unique\_Customers = len(Unique\_Customers)

print(f"There are {No\_of\_Unique\_Customers} Unique Customers in the Dataset")

**Output :-**

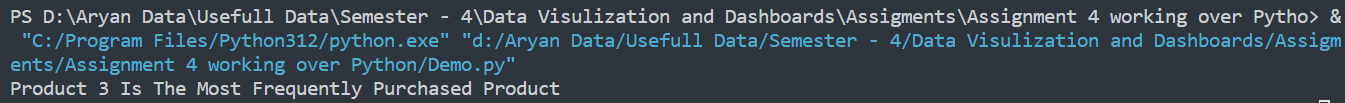
1. **What is the most frequently purchased product across all orders?**

**Code :-**

Frequently\_Purchased\_Product = Dataset["Product\_#"].mode()[0]

print(f"{Frequently\_Purchased\_Product} Is The Most Frequently Purchased Product")

**Output :-**



1. **What is the average total cost for each order category?**

**Code :-**

Order\_With\_Large\_Category = Dataset[(Dataset["Order\_Category"] == "Large Order")]

Order\_With\_Normal\_Category = Dataset[(Dataset["Order\_Category"] == "Normal Order")]

Order\_With\_Small\_Category = Dataset[(Dataset["Order\_Category"] == "Small Order")]

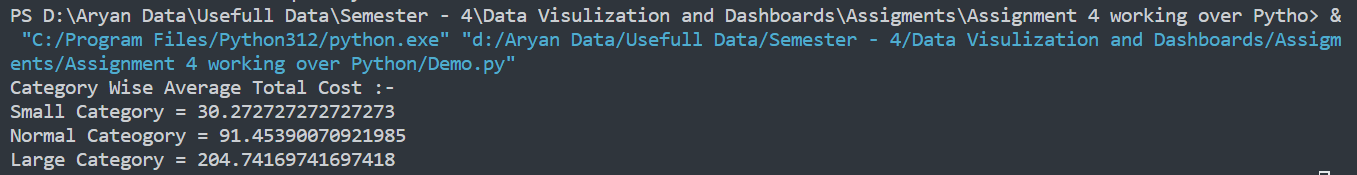
Average\_Total\_Cost\_In\_Large\_Order = Order\_With\_Large\_Category["Total\_Cost"].mean()

Average\_Total\_Cost\_In\_Normal\_Order = Order\_With\_Normal\_Category["Total\_Cost"].mean()

Average\_Total\_Cost\_In\_Small\_Order = Order\_With\_Small\_Category["Total\_Cost"].mean()

print(f"Category Wise Average Total Cost :-\nSmall Category {Average\_Total\_Cost\_In\_Small\_Order}\nNormal Cateogory = {Average\_Total\_Cost\_In\_Normal\_Order}\nLarge Category = {Average\_Total\_Cost\_In\_Large\_Order}"

)

**Output :-**

1. **How does the quantity of products impact the total cost in different order categories?**

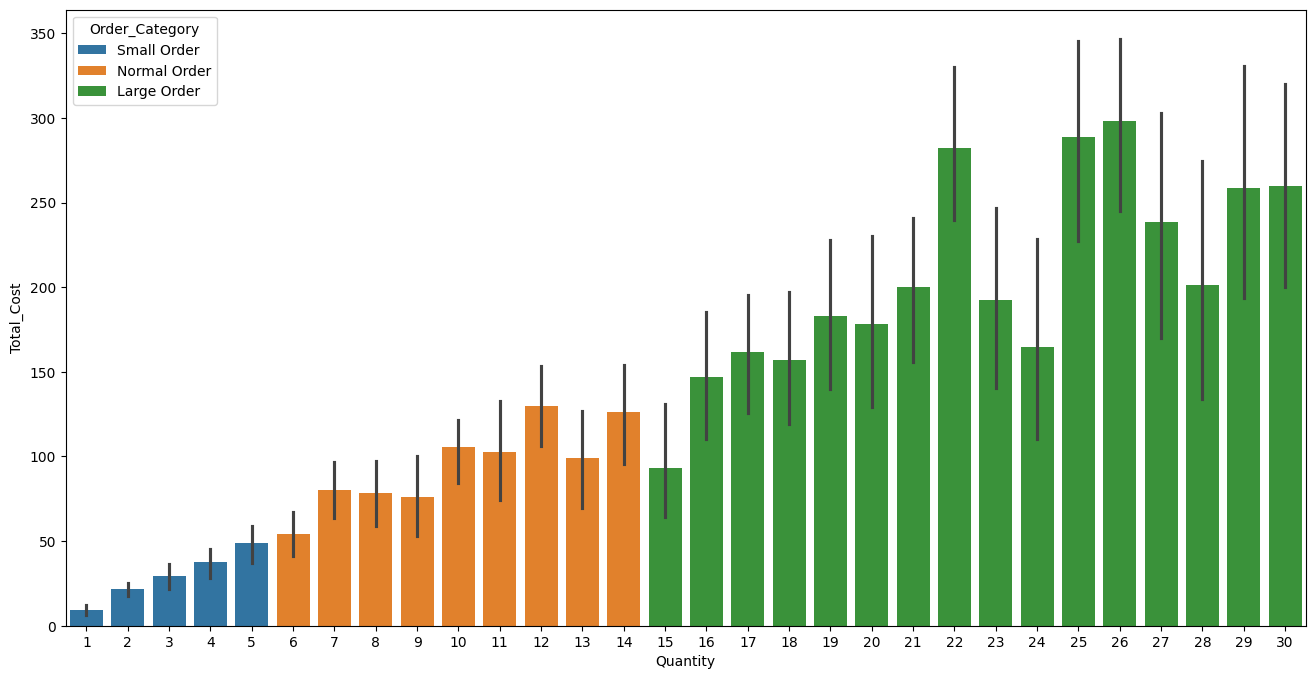
**Code :-**

plt.figure(figsize=(16,8))

sns.barplot(x=Dataset['Quantity'] , y=Dataset['Total\_Cost'] , hue=Dataset['Order\_Category'])

plt.show()

**Output :-**

****

1. **What is the proportion of small, normal, and large orders in the dataset?**

**Code :-**

Order\_With\_Large\_Category = Dataset[(Dataset["Order\_Category"] == "Large Order")]

Order\_With\_Normal\_Category = Dataset[(Dataset["Order\_Category"] == "Normal Order")]

Order\_With\_Small\_Category = Dataset[(Dataset["Order\_Category"] == "Small Order")]

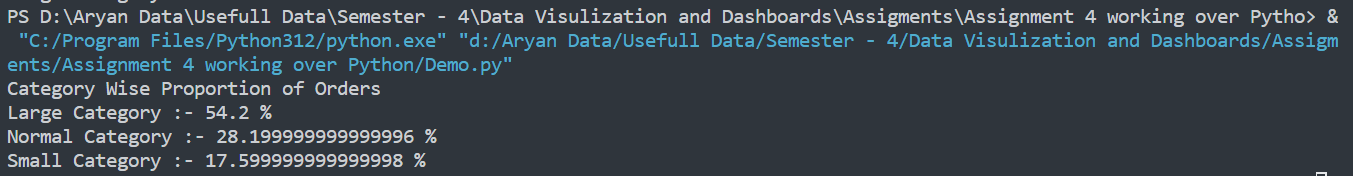
Orders\_In\_Large\_Order = (Order\_With\_Large\_Category.shape[0] / Dataset.shape[0]) \* 100

Orders\_In\_Normal\_Order = (Order\_With\_Normal\_Category.shape[0] / Dataset.shape[0]) \* 100

Orders\_In\_Small\_Order = (Order\_With\_Small\_Category.shape[0] / Dataset.shape[0]) \* 100

print(f"Category Wise Proportion of Orders\nLarge Category :- {Orders\_In\_Large\_Order} %\nNormal Category :- {Orders\_In\_Normal\_Order} %\nSmall Category :- {Orders\_In\_Small\_Order} %")

**Output :-**

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