

```
import numpy as np
import pandas as pd
import matplotlib as plt
import seaborn as sns
```

```
superstore = pd.read_csv(r"C:\Users\SUJITHA MANDAVILLI\Documents\
Project 1\SampleSuperstore_with_InventoryDays.csv")
```

```
superstore.info
```

```
<bound method DataFrame.info of          Row ID          Order ID  Order
Date  Ship Date  Ship Mode  \
0      1  CA-2016-152156  11-08-2016  11-11-2016  Second Class
1      2  CA-2016-152156  11-08-2016  11-11-2016  Second Class
2      3  CA-2016-138688  06-12-2016  6/16/2016  Second Class
3      4  US-2015-108966  10-11-2015  10/18/2015  Standard Class
4      5  US-2015-108966  10-11-2015  10/18/2015  Standard Class
...      ...      ...      ...      ...      ...
```

```
9989    9990  CA-2014-110422  1/21/2014  1/23/2014  Second Class
9990    9991  CA-2017-121258  2/26/2017  03-03-2017  Standard Class
9991    9992  CA-2017-121258  2/26/2017  03-03-2017  Standard Class
9992    9993  CA-2017-121258  2/26/2017  03-03-2017  Standard Class
9993    9994  CA-2017-119914  05-04-2017  05-09-2017  Second Class
```

```
Customer ID  Customer Name  Segment  Country
City  \
0    CG-12520  Claire Gute  Consumer  United States
Henderson
1    CG-12520  Claire Gute  Consumer  United States
Henderson
2    DV-13045  Darrin Van Huff  Corporate  United States  Los
Angeles
3    S0-20335  Sean O'Donnell  Consumer  United States  Fort
Lauderdale
4    S0-20335  Sean O'Donnell  Consumer  United States  Fort
Lauderdale
...      ...      ...      ...      ...
...
9989    TB-21400  Tom Boeckenhauer  Consumer  United States
Miami
```

9990	DB-13060	Dave Brooks	Consumer	United States
Costa Mesa				
9991	DB-13060	Dave Brooks	Consumer	United States
Costa Mesa				
9992	DB-13060	Dave Brooks	Consumer	United States
Costa Mesa				
9993	CC-12220	Chris Cortes	Consumer	United States
Westminster				

	...	Region	Product ID	Category	Sub-Category	\
0	...	South	FUR-B0-10001798	Furniture	Bookcases	
1	...	South	FUR-CH-10000454	Furniture	Chairs	
2	...	West	OFF-LA-10000240	Office Supplies	Labels	
3	...	South	FUR-TA-10000577	Furniture	Tables	
4	...	South	OFF-ST-10000760	Office Supplies	Storage	
...	...	...	...	...	...	
9989	...	South	FUR-FU-10001889	Furniture	Furnishings	
9990	...	West	FUR-FU-10000747	Furniture	Furnishings	
9991	...	West	TEC-PH-10003645	Technology	Phones	
9992	...	West	OFF-PA-10004041	Office Supplies	Paper	
9993	...	West	OFF-AP-10002684	Office Supplies	Appliances	

		Product Name	Sales
Quantity \			
0		Bush Somerset Collection Bookcase	261.9600
2			
1	Hon Deluxe Fabric Upholstered Stacking Chairs,...		731.9400
3			
2	Self-Adhesive Address Labels for Typewriters b...		14.6200
2			
3	Bretford CR4500 Series Slim Rectangular Table		957.5775
5			
4	Eldon Fold 'N Roll Cart System		22.3680
2			
...		...	...
...			
9989		Ultra Door Pull Handle	25.2480
3			
9990	Tenex B1-RE Series Chair Mats for Low Pile Car...		91.9600
2			
9991		Aastra 57i VoIP phone	258.5760
2			
9992	It's Hot Message Books with Stickers, 2 3/4" x 5"		29.6000
4			
9993	Acco 7-Outlet Masterpiece Power Center, Wihtou...		243.1600
2			

	Discount	Profit	Inventory Days
0	0.00	41.9136	2.322237
1	0.00	219.5820	1.246687

```

2      0.00      6.8714      41.609667
3      0.45 -383.0310      1.588209
4      0.20      2.5164      27.196590
...
9989    0.20      4.1028      36.141477
9990    0.00      15.6332      6.615195
9991    0.20      19.3932      2.352629
9992    0.00      13.3200      41.103604
9993    0.00      72.9480      2.501782

```

```
[9994 rows x 22 columns]>
```

```
superstore.describe()
```

	Row ID	Postal Code	Sales	Quantity
Discount \				
count	9994.000000	9994.000000	9994.000000	9994.000000
mean	4997.500000	55190.379428	229.858001	3.789574
std	2885.163629	32063.693350	623.245101	2.225110
min	1.000000	1040.000000	0.444000	1.000000
25%	2499.250000	23223.000000	17.280000	2.000000
50%	4997.500000	56430.500000	54.490000	3.000000
75%	7495.750000	90008.000000	209.940000	5.000000
max	9994.000000	99301.000000	22638.480000	14.000000

	Profit	Inventory Days
count	9994.000000	9994.000000
mean	28.656896	42.227635
std	234.260108	65.054251
min	-6599.978000	0.080615
25%	1.728750	4.757064
50%	8.666500	18.694940
75%	29.364000	55.606338
max	8399.976000	905.257937

```

correlation = superstore[['Inventory Days', 'Profit']].corr()
print("Correlation Matrix:\n", correlation)

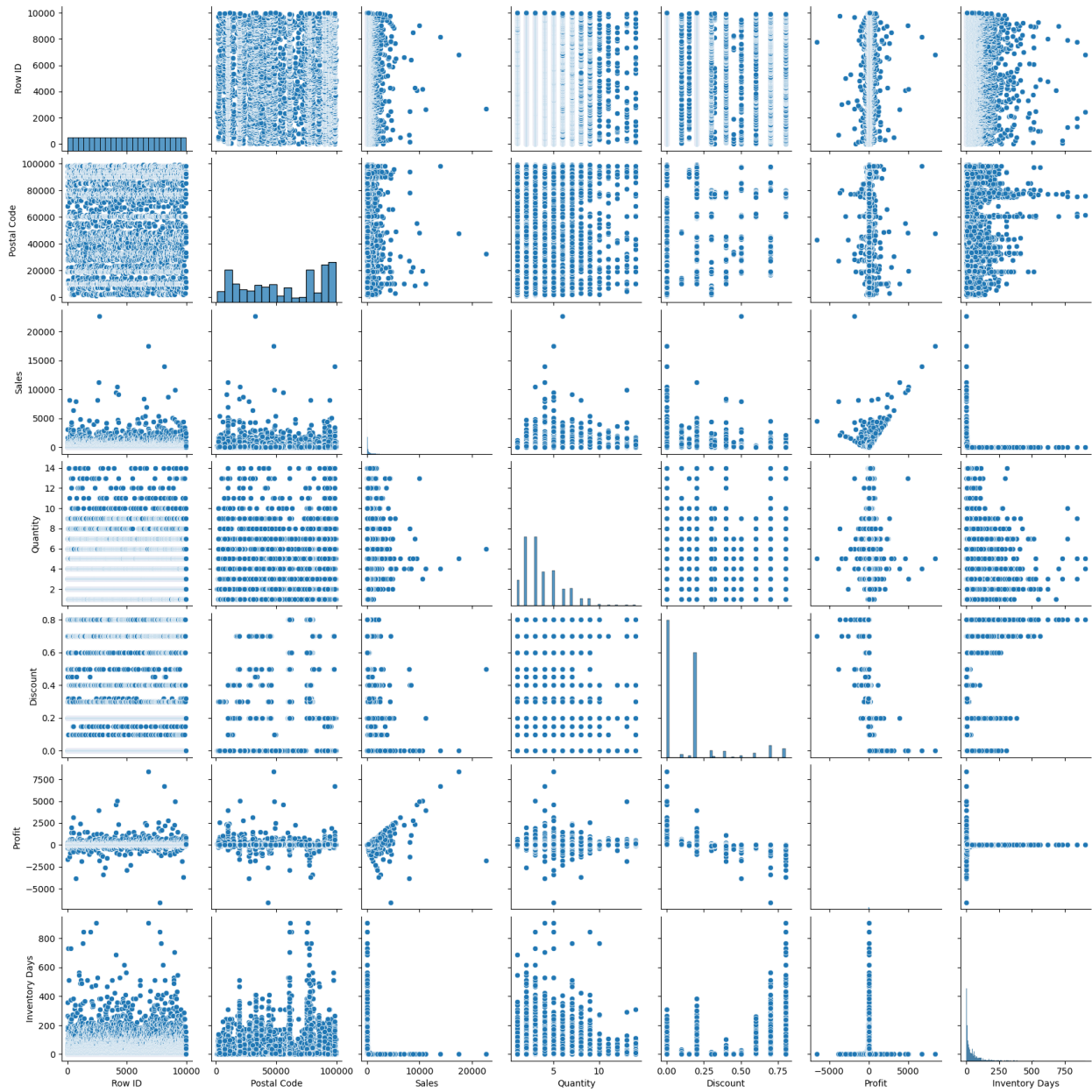
```

```
Correlation Matrix:
```

	Inventory Days	Profit
Inventory Days	1.000000	-0.070422
Profit	-0.070422	1.000000

```
sns.pairplot(superstore)
```

```
<seaborn.axisgrid.PairGrid at 0x1d5730a59d0>
```



## 1. Data Loading and Initial Overview

### Interpretation:

- This line loads a CSV file containing Superstore sales data, including a custom column **Inventory Days**.
- The .info method (although not executed here missing ()) would normally show:

Number of rows and columns

Column names and types

Non-null counts (to check missing values)

## 2. Descriptive Statistics

superstore.describe()

### Interpretation:

- Provides summary statistics for **numerical columns**.
- Important values:

Inventory Days:

- Mean = 42.22 → On average, items stay in inventory ~42 days.
- Max = 905 → Some items remain unsold for a very long time.

Profit:

- Mean = 28.66 → On average, each row contributes ₹28.66 in profit.
- Min = -6599.97 → Some entries have huge losses.

## 3. Correlation Calculation

```
correlation = superstore[['Inventory Days','Profit']].corr()
```

```
print("Correlation Matrix:\n", correlation)
```

### Output:

```
          Inventory Days  Profit
Inventory Days    1.000000 -0.070422
Profit           -0.070422  1.000000
```

### Interpretation:

- **Correlation coefficient between Inventory Days and Profit is -0.070422.**

This is a **very weak negative correlation**.

Interpretation: As Inventory Days slightly increase, Profit tends to decrease, but the relationship is not strong.

#### 4. Visual Pairwise Relationships

`sns.Pairplot(superstore)`

**Interpretation:**

- Generates scatterplots for all pairwise combinations of numerical columns, and histograms on the diagonals.
- Helps to
  - Identify **visual correlations**
  - Detect **clusters, trends, or outliers**
- Especially useful to visually check the weak correlation between Inventory Days and Profit.