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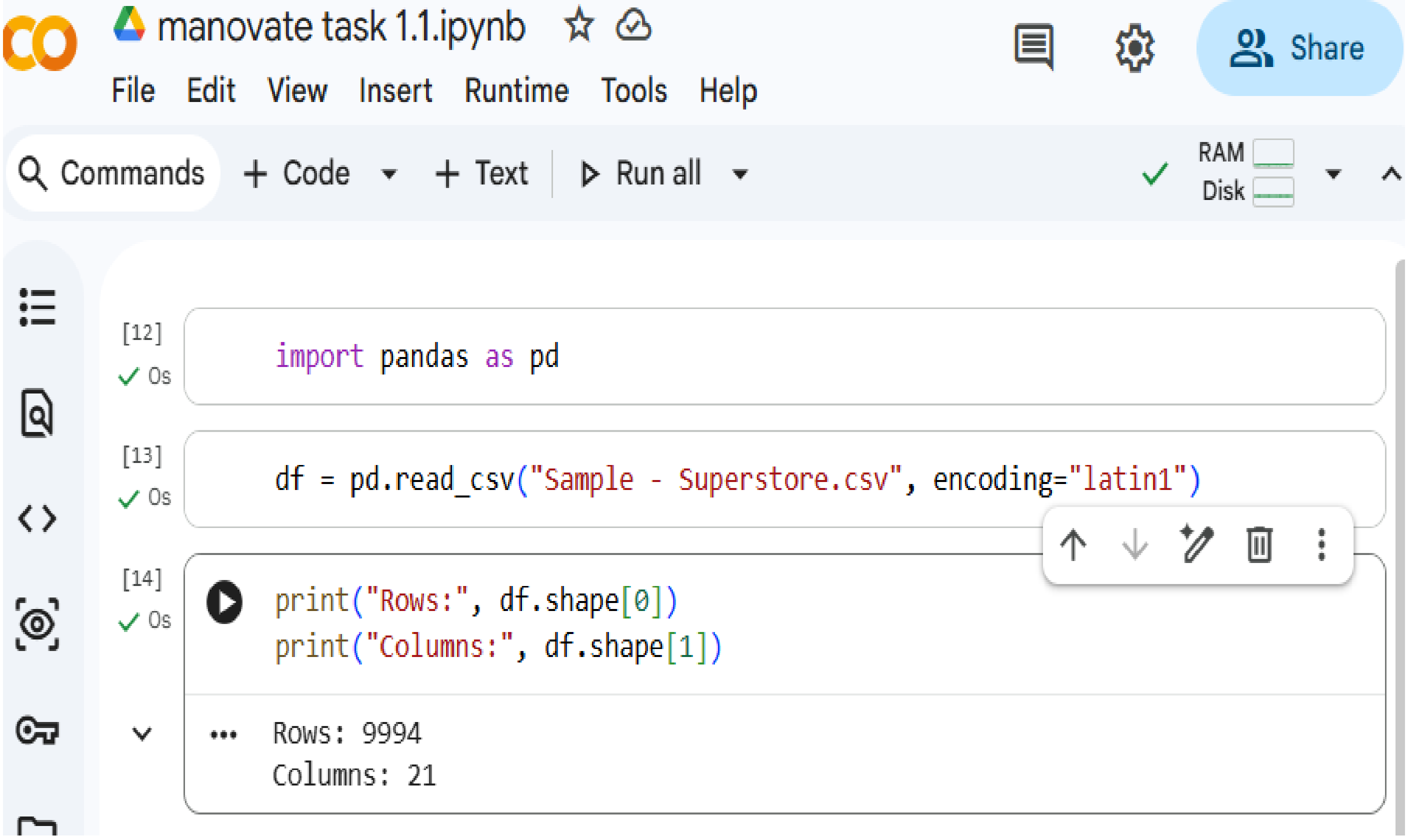
TASK 1 — DATA PROFILING

1. Number of Rows & Columns

- **Rows: 9,994**
- **Columns: 21**



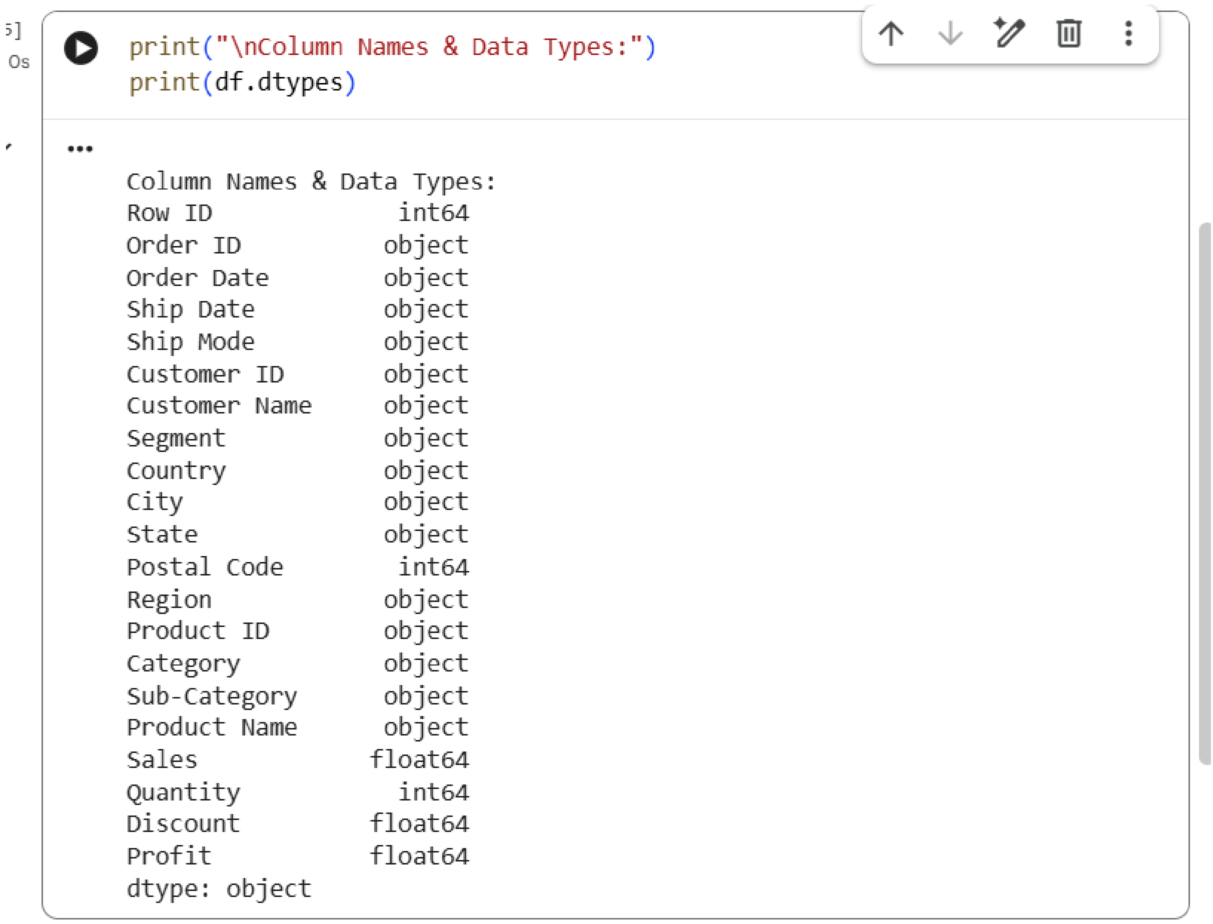
```
[12] import pandas as pd
```

```
[13] df = pd.read_csv("Sample - Superstore.csv", encoding="latin1")
```

```
[14] print("Rows:", df.shape[0])
     print("Columns:", df.shape[1])
```

```
Rows: 9994
Columns: 21
```

2. Column Names & Data Types

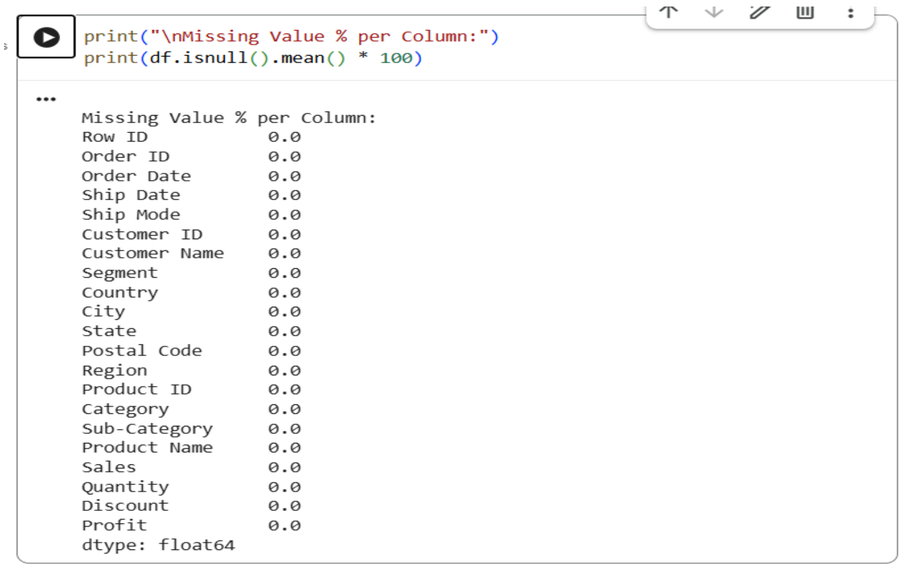


```
print("\nColumn Names & Data Types:")
print(df.dtypes)
```

```
Column Names & Data Types:
Row ID             int64
Order ID          object
Order Date        object
Ship Date         object
Ship Mode         object
Customer ID       object
Customer Name     object
Segment           object
Country           object
City              object
State             object
Postal Code        int64
Region            object
Product ID        object
Category          object
Sub-Category      object
Product Name      object
Sales            float64
Quantity           int64
Discount         float64
Profit           float64
dtype: object
```

3.Missing value percentage per column

- All columns have 0% missing values.

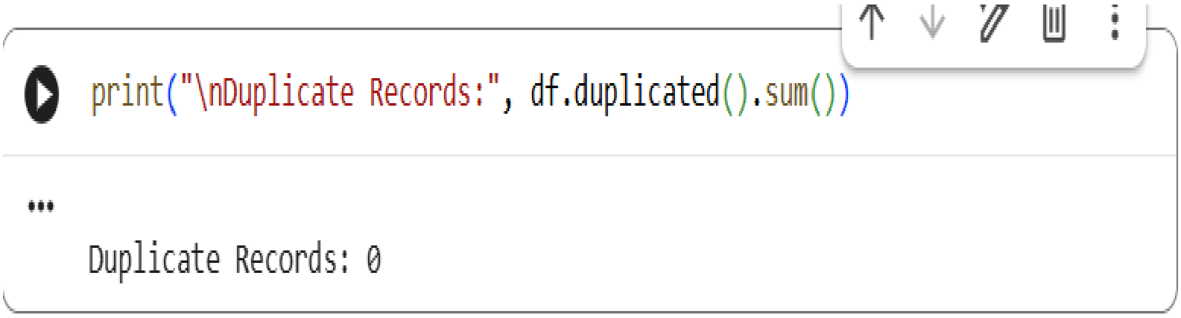


```
print("\nMissing Value % per Column:")
print(df.isnull().mean() * 100)
```

```
Missing Value % per Column:
Row ID           0.0
Order ID         0.0
Order Date       0.0
Ship Date        0.0
Ship Mode        0.0
Customer ID      0.0
Customer Name    0.0
Segment          0.0
Country          0.0
City             0.0
State            0.0
Postal Code      0.0
Region           0.0
Product ID       0.0
Category         0.0
Sub-Category     0.0
Product Name     0.0
Sales            0.0
Quantity         0.0
Discount         0.0
Profit           0.0
dtype: float64
```

4.Duplicate records (count)

- Duplicate row count**: 0**

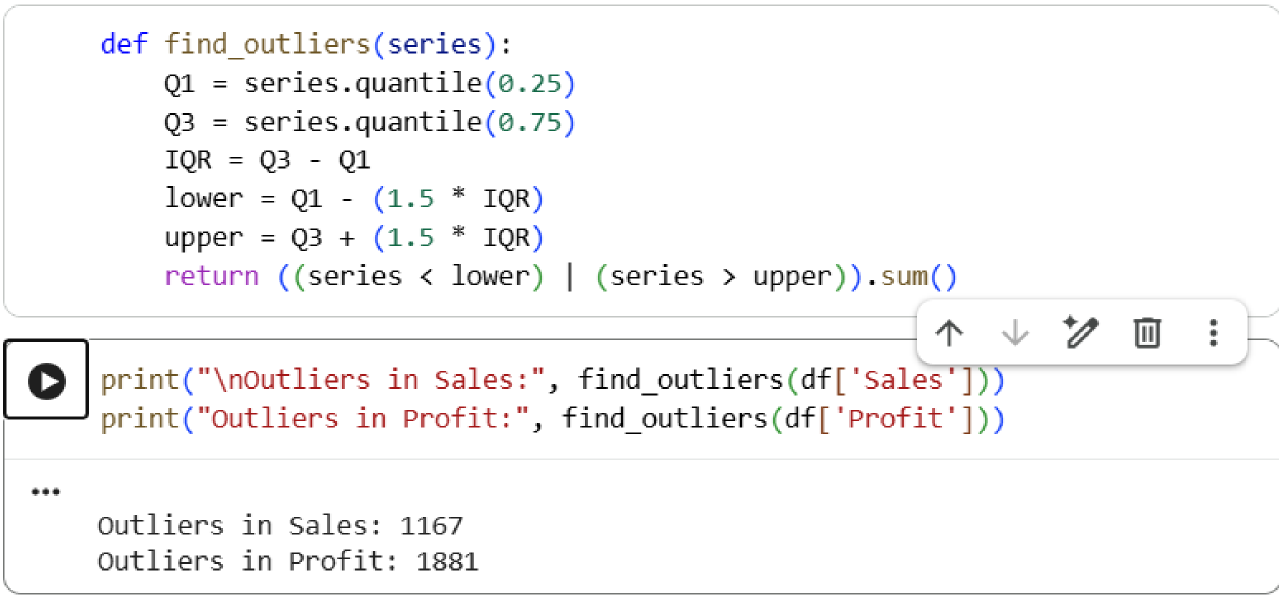


```
print("\nDuplicate Records:", df.duplicated().sum())
```

```
Duplicate Records: 0
```

5. Outliers in Sales / Profit

- Outliers in Sales: 1,167
- Outliers in Profit: 1,881



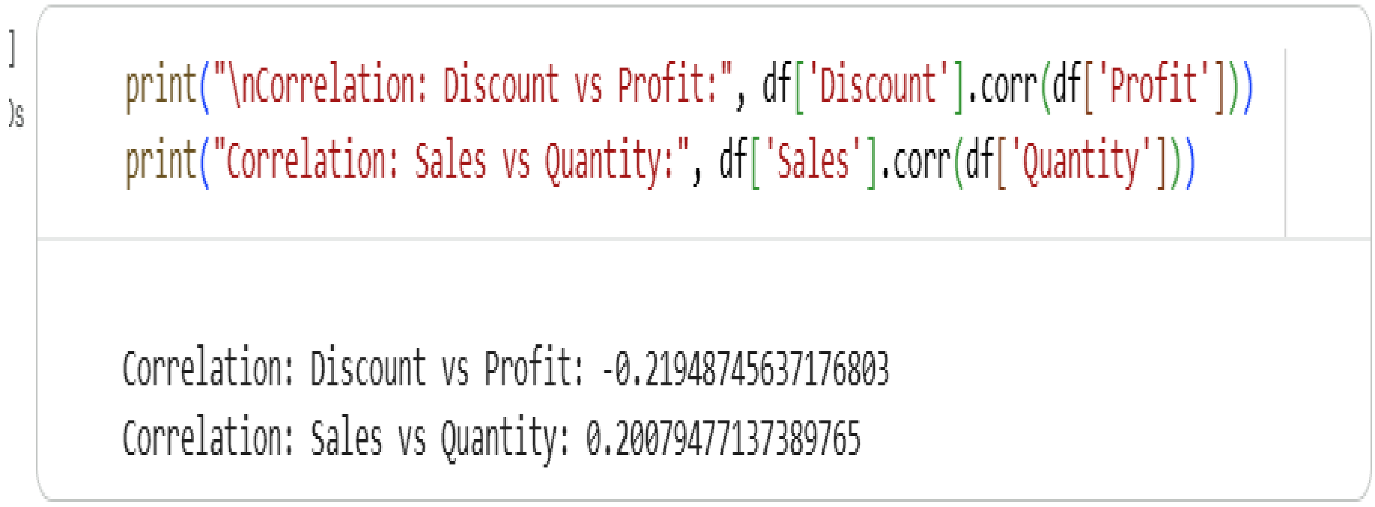
```
def find_outliers(series):
    Q1 = series.quantile(0.25)
    Q3 = series.quantile(0.75)
    IQR = Q3 - Q1
    lower = Q1 - (1.5 * IQR)
    upper = Q3 + (1.5 * IQR)
    return ((series < lower) | (series > upper)).sum()
```

```
print("\nOutliers in Sales:", find_outliers(df['Sales']))
print("Outliers in Profit:", find_outliers(df['Profit']))
```

```
Outliers in Sales: 1167
Outliers in Profit: 1881
```

6.Relationship check (Discount vs Profit, Sales vs Quantity)

Relationship	Correlation	Interpretation
Discount vs Profit	–0.219	Higher discount → lower profit (weak negative relationship)
Sales vs Quantity	0.201	Higher quantity → slightly higher sales (weak positive relationship)



```
print("\nCorrelation: Discount vs Profit:", df['Discount'].corr(df['Profit']))
print("Correlation: Sales vs Quantity:", df['Sales'].corr(df['Quantity']))
```

```
Correlation: Discount vs Profit: -0.21948745637176803
Correlation: Sales vs Quantity: 0.20079477137389765
```