Welcome to my EDA

This time we're gonna explore the data from amazone website

Firstly, lets import the module that we need

In [1]:
```
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
```

Here's the csv that i got from laptop category on amazon

In [2]:
```
testing = pd.read_csv("amazon_laptop_products.csv")
```

The data not perfect yet, so let's fix it!

Start from generalize the format

In [3]:
```
testing["price"] = (
    testing["price"]
    .astype(str)
    .str.replace("$", "", regex=False)
    .str.replace(",", "", regex=False)
    .astype(float)
)

testing["rating"] = pd.to_numeric(testing["rating"], errors="coerce")
testing["total_buy"] = (
    testing["total_buy"]
    .astype(str)
    .str.replace(",", "", regex=False)
    .astype(float)
)
```

Were noticing that the data we're not complete

In [4]:
```
testing.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 312 entries, 0 to 311
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   title      312 non-null    object 
 1   price      284 non-null    float64
 2   rating     296 non-null    float64
 3   total_buy  296 non-null    float64
dtypes: float64(3), object(1)
memory usage: 9.9+ KB
```

Drop it off

In [5]:
```
testing.dropna(inplace=True)
testing.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 271 entries, 0 to 310
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   title      271 non-null    object 
 1   price      271 non-null    float64
 2   rating     271 non-null    float64
 3   total_buy  271 non-null    float64
dtypes: float64(3), object(1)
memory usage: 10.6+ KB
```

Split it by space and get the first 6 words

In [6]:
```
temp_column = testing["title"]
temp_column = temp_column.str.replace(",", "")
new_title = temp_column.astype(str).str.split(" ",expand=True).iloc[:,0:6]
new_title
```

Out[6]:

	0	1	2	3	4	5
0	HP	14	Laptop	Intel	Celeron	N4020
1	Laptop	Laptop	Computer	with	Intel	N97
3	ASUS	ROG	Strix	G16	(2025)	Gaming
4	Laptop	16-inch	8GB	DDR	256GB	SSD
5	Acer	Aspire	3	A315-24P-R7VH	Slim	Laptop
...	...	...	...	...	...	...
306	acer	Aspire	Laptop	14"	WUXGA	Touch
307	Kipling	Women's	Seoul	Extra	Large	17”
308	2025	Gaming	Laptop	15.6	Inch	Laptop
309	Lenovo	IdeaPad	3	Laptop	15.6"	FHD
310	15.6"	Laptop	Screen	Extender	1080P	FHD

271 rows × 6 columns

Merge it in one column

In [7]:
```
new_title["merged"] = new_title[0] + " " + new_title[1] + " " + new_title[2]
new_title["merged"] = new_title["merged"].str.title()
new_title
```

Out[7]:

	0	1	2	3	4	5	merged
0	HP	14	Laptop	Intel	Celeron	N4020	Hp 14 Laptop Intel Celeron N4020
1	Laptop	Laptop	Computer	with	Intel	N97	Laptop Laptop Computer With Intel N97
3	ASUS	ROG	Strix	G16	(2025)	Gaming	Asus Rog Strix G16 (2025) Gaming
4	Laptop	16-inch	8GB	DDR	256GB	SSD	Laptop 16-Inch 8Gb Ddr 256Gb Ssd
5	Acer	Aspire	3	A315-24P-R7VH	Slim	Laptop	Acer Aspire 3 A315-24P-R7Vh Slim Laptop
...	...	...	...	...	...	...	...
306	acer	Aspire	Laptop	14"	WUXGA	Touch	Acer Aspire Laptop 14" Wuxga Touch
307	Kipling	Women's	Seoul	Extra	Large	17”	Kipling Women'S Seoul Extra Large 17”
308	2025	Gaming	Laptop	15.6	Inch	Laptop	2025 Gaming Laptop 15.6 Inch Laptop
309	Lenovo	IdeaPad	3	Laptop	15.6"	FHD	Lenovo Ideapad 3 Laptop 15.6" Fhd
310	15.6"	Laptop	Screen	Extender	1080P	FHD	15.6" Laptop Screen Extender 1080P Fhd

271 rows × 7 columns

Change the title before

In [8]:
```
testing["title"] = new_title["merged"]
testing
```

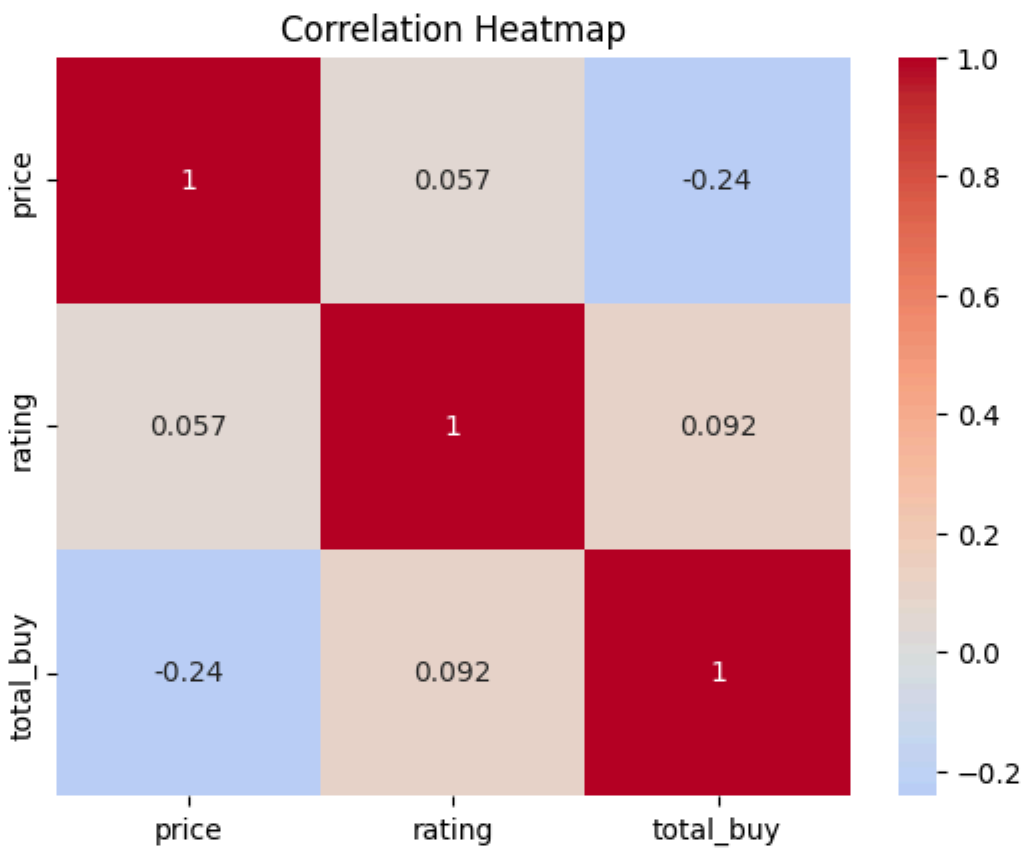
Out[8]:

	title	price	rating	total_buy
0	Hp 14 Laptop Intel Celeron N4020	172.16	4.1	3877.0
1	Laptop Laptop Computer With Intel N97	369.00	5.0	16.0
3	Asus Rog Strix G16 (2025) Gaming	1274.99	4.6	80.0
4	Laptop 16-Inch 8Gb Ddr 256Gb Ssd	199.99	5.0	16.0
5	Acer Aspire 3 A315-24P-R7Vh Slim Laptop	319.99	4.2	4219.0
...	...	...	...	...
306	Acer Aspire Laptop 14" Wuxga Touch	580.00	3.8	14.0
307	Kipling Women'S Seoul Extra Large 17”	72.00	4.7	806.0
308	2025 Gaming Laptop 15.6 Inch Laptop	549.99	3.8	4.0
309	Lenovo Ideapad 3 Laptop 15.6" Fhd	499.00	4.2	273.0
310	15.6" Laptop Screen Extender 1080P Fhd	279.99	4.6	323.0

271 rows × 4 columns

Is there any correlation?

In [9]:
```
corr = testing[["price", "rating", "total_buy"]].corr()

sns.heatmap(corr, annot=True, cmap="coolwarm", center=0)
plt.title("Correlation Heatmap")
plt.show()
```

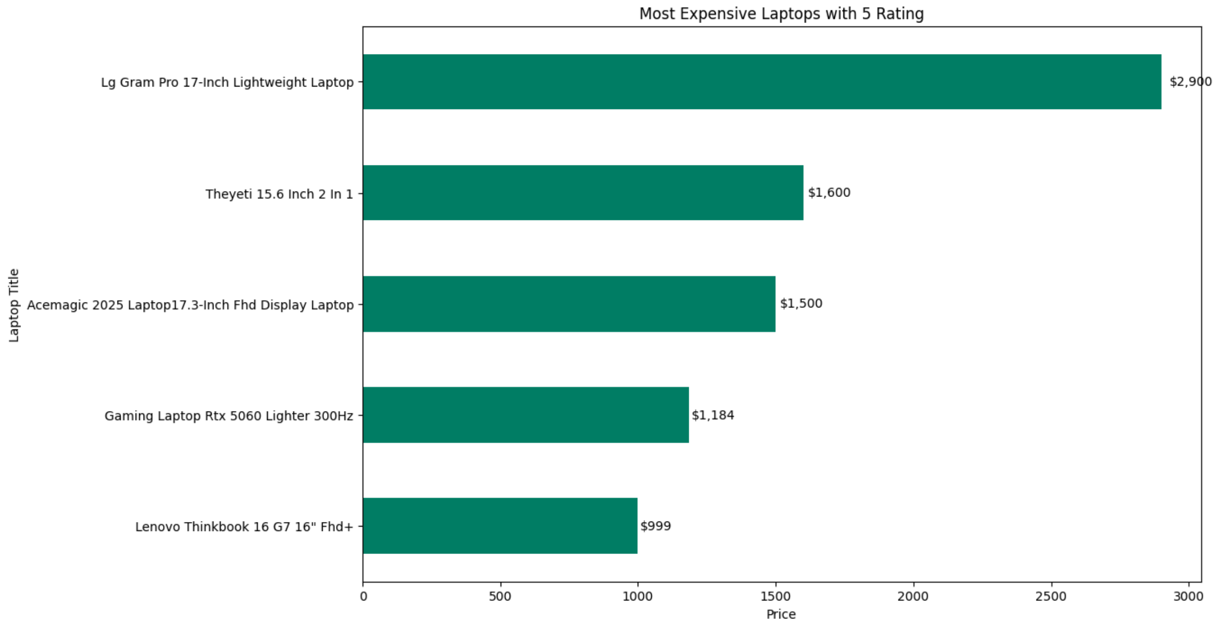


rating with price or total buy makes just small correlation

More closer the index to 1, more correlation the columns are

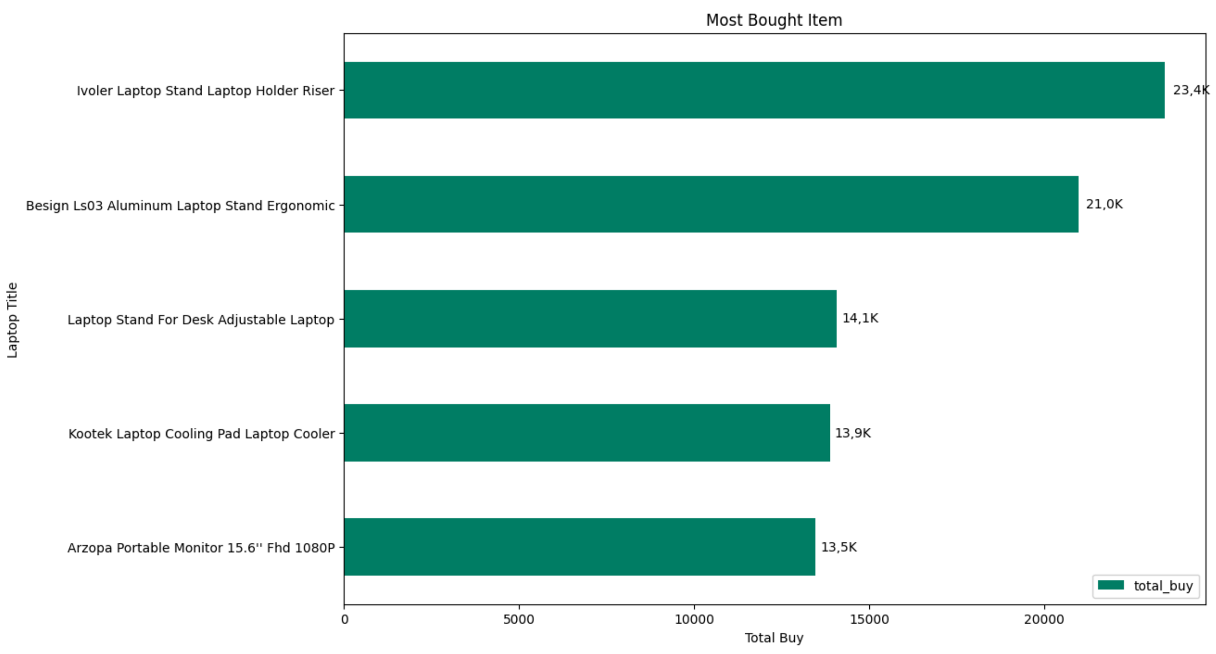
Visualize the most expensive laptop by rating

In [10]:
```
good_laptops = (
    testing[testing["rating"] == 5]
    .sort_values(by="price", ascending=False)
    .head(5)
    .reset_index(drop=True)
)

ax = good_laptops.plot(
    kind="barh",
    x="title",
    y="price",
    legend=False,
    figsize=(12, 8),
    cmap="summer"
)

plt.title("Most Expensive Laptops with 5 Rating")
plt.xlabel("Price")
plt.ylabel("Laptop Title")

for p in ax.patches:
    ax.text(
        p.get_width() + (p.get_width()*0.01),
        p.get_y() + p.get_height()/2,
        f"${p.get_width():,.0f}",
        va="center"
    )
ax.invert_yaxis()

plt.show()
```



The most bought item

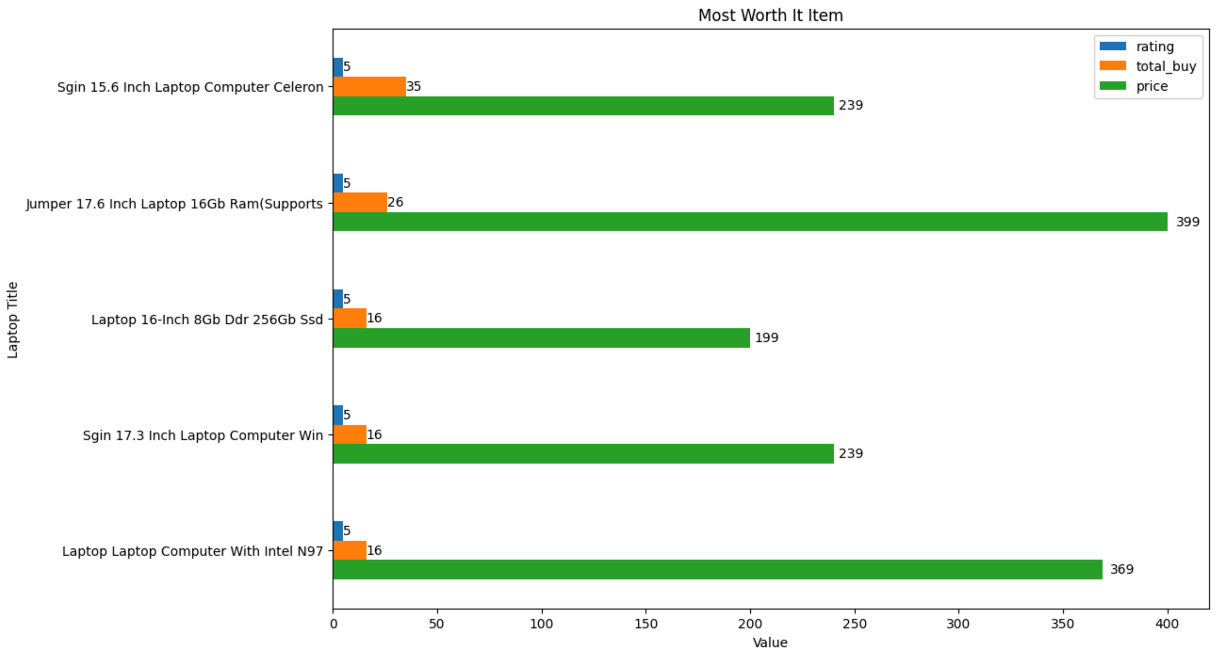
In [11]:
```
most_bought = testing[["title","total_buy"]].sort_values(by="total_buy", asc
ax = most_bought.plot(
    kind="barh",
    x="title",
    y="total_buy",
    figsize=[12,8],
    cmap="summer"
    )
for p in ax.patches:
    ax.text(
    p.get_width() + (p.get_width() * 0.01),
    p.get_y() + p.get_height() / 2,
    (lambda x: f"{x/1_000_000:.1f}M".replace(".", ",") if x >= 1_000_000
     else f"{x/1_000:.1f}K".replace(".", ",") if x >= 1_000
     else str(int(x)))(p.get_width()),
    va="center"
)

plt.title("Most Bought Item")
plt.xlabel("Total Buy")
plt.ylabel("Laptop Title")
ax.invert_yaxis()
plt.show()
```



We're noticing here, that not all item is specific laptop

So the most worth it item by highest rating, highest bought, and lowest price is

In [12]:
```
worth_it_item = testing.sort_values(by=["rating", "total_buy", "price"], asc
ax = worth_it_item.plot(
    kind="barh",
    x="title",
    y=["rating", "total_buy", "price"],
    figsize=(12,8)
)
for p in ax.patches:
    ax.text(
    p.get_width() + (p.get_width() * 0.01),
    p.get_y() + p.get_height() / 2,
    str(int(p.get_width())),
    va="center"
)

plt.title("Most Worth It Item")
plt.xlabel("Value")
plt.ylabel("Laptop Title")
ax.invert_yaxis()
plt.show()
```


Most Worth It Item
rating
total_buy
price
Sgin 15.6 Inch Laptop Computer Celeron
Jumper 17.6 Inch Laptop 16Gb Ram(Supports
Laptop 16-Inch 8Gb Ddr 256Gb Ssd
Sgin 17.3 Inch Laptop Computer Win
Laptop Laptop Computer With Intel N97
5
35
239
5
26
399
5
16
199
5
16
239
5
16
369
0
50
100
150
200
250
300
350
400
Value
Laptop Title