p6ko1hict

January 23, 2025

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

[11]:
```
#loading the data set
data = pd.read_csv("C:/Users/91703/OneDrive/Desktop/LAPTOP PRICES DATA.csv")
```

[12]:
```
#To view the top and bottom of the data
data.head()
```

[12]:

	Company	Product	TypeName	Inches	Ram	OS	Weight	Price_euros	Screen	ScreenW	…	RetinaDisplay	CPU_company	CPU_freq	CPU_model	PrimaryStorage	SecondaryStorage	PrimaryStorageType	SecondaryStorageType	GPU_company	GPU_model
0	Apple	MacBook Pro	Ultrabook	13.3	8	macOS	1.37	1339.69	Standard	2560	…	Yes	Intel	2.3	Core i5	128	0	SSD	No	Intel	Iris Plus Graphics 640
1	Apple	Macbook Air	Ultrabook	13.3	8	macOS	1.34	898.94	Standard	1440	…	No	Intel	1.8	Core i5	128	0	Flash Storage	No	Intel	HD Graphics 6000
2	HP	250 G6	Notebook	15.6	8	No OS	1.86	575.00	Full HD	1920	…	No	Intel	2.5	Core i5 7200U	256	0	SSD	No	Intel	HD Graphics 620
3	Apple	MacBook Pro	Ultrabook	15.4	16	macOS	1.83	2537.45	Standard	2880	…	Yes	Intel	2.7	Core i7	512	0	SSD	No	AMD	Radeon Pro 455
4	Apple	MacBook Pro	Ultrabook	13.3	8	macOS	1.37	1803.60	Standard	2560	…	Yes	Intel	3.1	Core i5	256	0	SSD	No		

```
4        Intel  Iris Plus Graphics 650

[5 rows x 23 columns]
```

[13]:
```
data.tail()
```

[13]:
```
     Company                                Product            TypeName  Inches  \
1270  Lenovo                    Yoga 500-14ISK  2 in 1 Convertible    14.0
1271  Lenovo                    Yoga 900-13ISK  2 in 1 Convertible    13.3
1272  Lenovo                 IdeaPad 100S-14IBR            Notebook    14.0
1273      HP  15-AC110nv (i7-6500U/6GB/1TB/Radeon            Notebook    15.6
1274    Asus  X553SA-XX031T (N3050/4GB/500GB/W10)            Notebook    15.6

      Ram          OS  Weight  Price_euros    Screen  ScreenW  …  \
1270    4  Windows 10    1.80        638.0   Full HD     1920  …
1271   16  Windows 10    1.30       1499.0  Quad HD+     3200  …
1272    2  Windows 10    1.50        229.0  Standard     1366  …
1273    6  Windows 10    2.19        764.0  Standard     1366  …
1274    4  Windows 10    2.20        369.0  Standard     1366  …

     RetinaDisplay CPU_company CPU_freq               CPU_model  \
1270            No       Intel      2.5           Core i7 6500U
1271            No       Intel      2.5           Core i7 6500U
1272            No       Intel      1.6  Celeron Dual Core N3050
1273            No       Intel      2.5           Core i7 6500U
1274            No       Intel      1.6  Celeron Dual Core N3050

     PrimaryStorage  SecondaryStorage PrimaryStorageType  \
1270            128                 0               SSD
1271            512                 0               SSD
1272             64                 0     Flash Storage
1273           1024                 0               HDD
1274            500                 0               HDD

     SecondaryStorageType  GPU_company        GPU_model
1270                   No        Intel  HD Graphics 520
1271                   No        Intel  HD Graphics 520
1272                   No        Intel      HD Graphics
1273                   No          AMD   Radeon R5 M330
1274                   No        Intel      HD Graphics

[5 rows x 23 columns]
```

[16]:
```
#To know the shape
data.shape
```

[16]:
```
(1275, 23)
```

[14]:
```
#to know the information
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1275 entries, 0 to 1274
Data columns (total 23 columns):
 #   Column                Non-Null Count  Dtype
---  ------                --------------  -----
 0   Company               1275 non-null   object
 1   Product               1275 non-null   object
 2   TypeName              1275 non-null   object
 3   Inches                1275 non-null   float64
 4   Ram                   1275 non-null   int64
 5   OS                    1275 non-null   object
 6   Weight                1275 non-null   float64
 7   Price_euros           1275 non-null   float64
 8   Screen                1275 non-null   object
 9   ScreenW               1275 non-null   int64
 10  ScreenH               1275 non-null   int64
 11  Touchscreen           1275 non-null   object
 12  IPSpanel              1275 non-null   object
 13  RetinaDisplay         1275 non-null   object
 14  CPU_company           1275 non-null   object
 15  CPU_freq              1275 non-null   float64
 16  CPU_model             1275 non-null   object
 17  PrimaryStorage        1275 non-null   int64
 18  SecondaryStorage      1275 non-null   int64
 19  PrimaryStorageType    1275 non-null   object
 20  SecondaryStorageType  1275 non-null   object
 21  GPU_company           1275 non-null   object
 22  GPU_model             1275 non-null   object
dtypes: float64(4), int64(5), object(14)
memory usage: 229.2+ KB
```

[17]:
```
#To know the statstical description of the data
data.describe()
```

[17]:

	Inches	Ram	Weight	Price_euros	ScreenW	\
count	1275.000000	1275.000000	1275.000000	1275.000000	1275.000000	
mean	15.022902	8.440784	2.040525	1134.969059	1900.043922	
std	1.429470	5.097809	0.669196	700.752504	493.346186	
min	10.100000	2.000000	0.690000	174.000000	1366.000000	
25%	14.000000	4.000000	1.500000	609.000000	1920.000000	
50%	15.600000	8.000000	2.040000	989.000000	1920.000000	
75%	15.600000	8.000000	2.310000	1496.500000	1920.000000	
max	18.400000	64.000000	4.700000	6099.000000	3840.000000	

```
           ScreenH     CPU_freq  PrimaryStorage  SecondaryStorage
count  1275.000000  1275.000000     1275.000000       1275.000000
mean   1073.904314     2.302980      444.517647        176.069020
std     283.883940     0.503846      365.537726        415.960655
min     768.000000     0.900000        8.000000          0.000000
25%    1080.000000     2.000000      256.000000          0.000000
50%    1080.000000     2.500000      256.000000          0.000000
75%    1080.000000     2.700000      512.000000          0.000000
max    2160.000000     3.600000     2048.000000       2048.000000
```

[19]:
```
#To know the null values
data.isna()
```

[19]:
```
      Company  Product  TypeName  Inches    Ram     OS  Weight  Price_euros  \
0       False    False     False   False  False  False   False        False
1       False    False     False   False  False  False   False        False
2       False    False     False   False  False  False   False        False
3       False    False     False   False  False  False   False        False
4       False    False     False   False  False  False   False        False
…       …      …       …     …    …    …     …          …
1270    False    False     False   False  False  False   False        False
1271    False    False     False   False  False  False   False        False
1272    False    False     False   False  False  False   False        False
1273    False    False     False   False  False  False   False        False
1274    False    False     False   False  False  False   False        False

      Screen  ScreenW  …  RetinaDisplay  CPU_company  CPU_freq  CPU_model  \
0      False    False  …          False        False     False      False
1      False    False  …          False        False     False      False
2      False    False  …          False        False     False      False
3      False    False  …          False        False     False      False
4      False    False  …          False        False     False      False
…      …      …  …  …           …          …       …        …
1270   False    False  …          False        False     False      False
1271   False    False  …          False        False     False      False
1272   False    False  …          False        False     False      False
1273   False    False  …          False        False     False      False
1274   False    False  …          False        False     False      False

      PrimaryStorage  SecondaryStorage  PrimaryStorageType  \
0              False             False               False
1              False             False               False
2              False             False               False
3              False             False               False
4              False             False               False
…              …               …                 …
1270           False             False               False
```

```
1271          False             False               False
1272          False             False               False
1273          False             False               False
1274          False             False               False

      SecondaryStorageType  GPU_company  GPU_model
0                    False        False      False
1                    False        False      False
2                    False        False      False
3                    False        False      False
4                    False        False      False
…                    …          …        …
1270                 False        False      False
1271                 False        False      False
1272                 False        False      False
1273                 False        False      False
1274                 False        False      False

[1275 rows x 23 columns]
```

[20]:
```
#To know the only count of the null value
data.isna().sum()
```

[20]:
```
Company                0
Product                0
TypeName               0
Inches                 0
Ram                    0
OS                     0
Weight                 0
Price_euros            0
Screen                 0
ScreenW                0
ScreenH                0
Touchscreen            0
IPSpanel               0
RetinaDisplay          0
CPU_company            0
CPU_freq               0
CPU_model              0
PrimaryStorage         0
SecondaryStorage       0
PrimaryStorageType     0
SecondaryStorageType   0
GPU_company            0
GPU_model              0
dtype: int64
```

[21]:
```
#To know the count of the different companys
data["Company"].value_counts()
```

[21]:
```
Company
Dell          291
Lenovo        289
HP            268
Asus          152
Acer          101
MSI            54
Toshiba        48
Apple          21
Samsung         9
Razer           7
Mediacom        7
Microsoft       6
Xiaomi          4
Vero            4
Chuwi           3
Google          3
Fujitsu         3
LG              3
Huawei          2
Name: count, dtype: int64
```

[30]:
```
#to get the top companys based on their product weight
data.groupby(["Weight"])["Company"].max()
```

[30]:
```
Weight
0.69      Lenovo
0.81     Samsung
0.91        Asus
0.92       Apple
0.97          HP
           …
4.40         MSI
4.42        Dell
4.50         MSI
4.60      Lenovo
4.70        Asus
Name: Company, Length: 171, dtype: object
```

[31]:
```
data['Company'].value_counts()
```

[31]:
```
Company
Dell          291
Lenovo        289
```

```
HP          268
Asus        152
Acer        101
MSI          54
Toshiba      48
Apple        21
Samsung       9
Razer         7
Mediacom      7
Microsoft     6
Xiaomi        4
Vero          4
Chuwi         3
Google        3
Fujitsu       3
LG            3
Huawei        2
Name: count, dtype: int64
```

[42]:
```
#To get all the companys which their GPU_models are "HD Graphics 6000"
df = data[(data["GPU_model"] == "HD Graphics 6000")]
df
```

[42]:

	Company	Product	TypeName	Inches	Ram	OS	Weight	\
1	Apple	Macbook Air	Ultrabook	13.3	8	macOS	1.34	
7	Apple	Macbook Air	Ultrabook	13.3	8	macOS	1.34	
26	Apple	MacBook Air	Ultrabook	13.3	8	Mac OS X	1.35	
34	Apple	MacBook Air	Ultrabook	13.3	8	Mac OS X	1.35	
1234	Apple	MacBook Air	Ultrabook	11.6	4	Mac OS X	1.08	

	Price_euros	Screen	ScreenW	…	RetinaDisplay	CPU_company	CPU_freq	\
1	898.94	Standard	1440	…	No	Intel	1.8	
7	1158.70	Standard	1440	…	No	Intel	1.8	
26	1099.00	Standard	1440	…	No	Intel	1.6	
34	998.00	Standard	1440	…	No	Intel	1.6	
1234	959.00	Standard	1366	…	No	Intel	1.6	

	CPU_model	PrimaryStorage	SecondaryStorage	PrimaryStorageType	\
1	Core i5	128	0	Flash Storage	
7	Core i5	256	0	Flash Storage	
26	Core i5	128	0	Flash Storage	
34	Core i5	256	0	Flash Storage	
1234	Core i5	256	0	Flash Storage	

	SecondaryStorageType	GPU_company	GPU_model
1	No	Intel	HD Graphics 6000
7	No	Intel	HD Graphics 6000

```
26                    No        Intel  HD Graphics 6000
34                    No        Intel  HD Graphics 6000
1234                  No        Intel  HD Graphics 6000

[5 rows x 23 columns]
```

[52]:
```
#To get the top 5 companys by their primary storage capacity
data.groupby([data["PrimaryStorage"] > 550])["Company"].head()
```

[52]:
```
0      Apple
1      Apple
2         HP
3      Apple
4      Apple
18    Lenovo
25      Dell
29        HP
36      Acer
38        HP
Name: Company, dtype: object
```

[ ]:
```

```