

# Mobiles Dataset (2025)

## About Dataset

This dataset contains detailed specifications and official launch prices of various mobile phone models from different companies. It provides insights into smartphone hardware, pricing trends, and brand competitiveness across multiple countries. The dataset includes key features such as RAM, camera specifications, battery capacity, processor details, and screen size.

One important aspect of this dataset is the pricing information. The recorded prices represent the official launch prices of the mobile phones at the time they were first introduced in the market. Prices vary based on the country and the launch period, meaning older models reflect their original launch prices, while newer models include their most recent launch prices. This makes the dataset valuable for studying price trends over time and comparing smartphone affordability across different regions.

## Features:

Company Name: The brand or manufacturer of the mobile phone. Model Name: The specific model of the smartphone. Mobile Weight: The weight of the mobile phone (in grams). RAM: The amount of Random Access Memory (RAM) in the device (in GB). Front Camera: The resolution of the front (selfie) camera (in MP). Back Camera: The resolution of the primary rear camera (in MP). Processor: The chipset or processor used in the device. Battery Capacity: The battery size of the smartphone (in mAh). Screen Size: The display size of the smartphone (in inches). Launched Price: (Pakistan, India, China, USA, Dubai): The official launch price of the mobile in the respective country at the time of its release. Prices vary based on the year the mobile was launched. Launched Year: The year the mobile phone was officially launched.

## Importing dependencies

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

## Reading the file

```
data = pd.read_csv("Mobile.csv",encoding="ISO-8859-1")
data
```

	Company Name	Model Name	Mobile Weight	RAM	Front Camera
0	Apple	iPhone 16 128GB	174g	6GB	12MP
1	Apple	iPhone 16 256GB	174g	6GB	12MP
2	Apple	iPhone 16 512GB	174g	6GB	12MP
3	Apple	iPhone 16 Plus 128GB	203g	6GB	

12MP							
4	Apple	iPhone 16 Plus	256GB	203g	6GB		
12MP							
..	...		...	...	...		
...							
925	Poco	Pad 5G	128GB	571g	8GB		
8MP							
926	Poco	Pad 5G	256GB	571g	8GB		
8MP							
927	Samsung	Galaxy Z Fold6	256GB	239g	12GB	10MP, 4MP	
(UDC)							
928	Samsung	Galaxy Z Fold6	512GB	239g	12GB	10MP, 4MP	
(UDC)							
929	Samsung	Galaxy Z Fold6	1TB	239g	12GB	10MP, 4MP	
(UDC)							
	Back Camera		Processor	Battery Capacity	Screen Size	\	
0	48MP		A17 Bionic	3,600mAh	6.1 inches		
1	48MP		A17 Bionic	3,600mAh	6.1 inches		
2	48MP		A17 Bionic	3,600mAh	6.1 inches		
3	48MP		A17 Bionic	4,200mAh	6.7 inches		
4	48MP		A17 Bionic	4,200mAh	6.7 inches		
..	...		...	...	...		
925	8MP	Snapdragon 7s	Gen 2	10,000mAh	12.1 inches		
926	8MP	Snapdragon 7s	Gen 2	10,000mAh	12.1 inches		
927	50MP	Snapdragon 8	Gen 3	4400mAh	7.6 inches		
928	50MP	Snapdragon 8	Gen 3	4400mAh	7.6 inches		
929	50MP	Snapdragon 8	Gen 3	4400mAh	7.6 inches		
	Launched Price (Pakistan)	Launched Price (India)	Launched Price				
(China) \							
0	PKR 224,999	INR 79,999	CNY				
5,799							
1	PKR 234,999	INR 84,999	CNY				
6,099							
2	PKR 244,999	INR 89,999	CNY				
6,499							
3	PKR 249,999	INR 89,999	CNY				
6,199							
4	PKR 259,999	INR 94,999	CNY				
6,499							
..	...	...					
...							
925	PKR 66,220	INR 23,999	CNY				
2,099							
926	PKR 71,220	INR 25,999	CNY				
2,299							
927	PKR 604,999	INR 164,999					
¥13,999							

928	PKR 544,999	INR 176,999	CNY
15,999			
929	Not available	INR 200,999	CNY
17,999			
	Launched Price (USA)	Launched Price (Dubai)	Launched Year
0	USD 799	AED 2,799	2024
1	USD 849	AED 2,999	2024
2	USD 899	AED 3,199	2024
3	USD 899	AED 3,199	2024
4	USD 949	AED 3,399	2024
..	...	...	...
925	USD 280	AED 1,029	2024
926	USD 300	AED 1,099	2024
927	USD 1,899	AED 7,199	2024
928	USD 1719	AED 7,699	2024
929	USD 2,259	AED 8,699	2024
[930 rows x 15 columns]			

## Data Preprocessing

```
data.head(10)
```

Company Name	Model Name	Mobile Weight	RAM	Front
Camera \				
0 Apple iPhone 16 128GB	174g	6GB		
12MP				
1 Apple iPhone 16 256GB	174g	6GB		
12MP				
2 Apple iPhone 16 512GB	174g	6GB		
12MP				
3 Apple iPhone 16 Plus 128GB	203g	6GB		
12MP				
4 Apple iPhone 16 Plus 256GB	203g	6GB		
12MP				
5 Apple iPhone 16 Plus 512GB	203g	6GB		
12MP				
6 Apple iPhone 16 Pro 128GB	206g	6GB	12MP	/
4K				
7 Apple iPhone 16 Pro 256GB	206g	8GB	12MP	/
4K				
8 Apple iPhone 16 Pro 512GB	206g	8GB	12MP	/
4K				
9 Apple iPhone 16 Pro Max 128GB	221g	6GB	12MP	/
4K				
Back Camera	Processor	Battery Capacity	Screen Size	\
0 48MP	A17 Bionic	3,600mAh	6.1 inches	
1 48MP	A17 Bionic	3,600mAh	6.1 inches	

2	48MP	A17 Bionic	3,600mAh	6.1 inches
3	48MP	A17 Bionic	4,200mAh	6.7 inches
4	48MP	A17 Bionic	4,200mAh	6.7 inches
5	48MP	A17 Bionic	4,200mAh	6.7 inches
6	50MP + 12MP	A17 Pro	4,400mAh	6.1 inches
7	50MP + 12MP	A17 Pro	4,400mAh	6.1 inches
8	50MP + 12MP	A17 Pro	4,400mAh	6.1 inches
9	48MP + 12MP	A17 Pro	4,500mAh	6.7 inches

	Launched Price (Pakistan)	Launched Price (India)	Launched Price (China) \
0	PKR 224,999	INR 79,999	CNY 5,799
1	PKR 234,999	INR 84,999	CNY 6,099
2	PKR 244,999	INR 89,999	CNY 6,499
3	PKR 249,999	INR 89,999	CNY 6,199
4	PKR 259,999	INR 94,999	CNY 6,499
5	PKR 274,999	INR 104,999	CNY 6,999
6	PKR 284,999	INR 99,999	CNY 6,999
7	PKR 294,999	INR 104,999	CNY 7,099
8	PKR 314,999	INR 114,999	CNY 7,499
9	PKR 314,999	INR 109,999	CNY 7,499

	Launched Price (USA)	Launched Price (Dubai)	Launched Year
0	USD 799	AED 2,799	2024
1	USD 849	AED 2,999	2024
2	USD 899	AED 3,199	2024
3	USD 899	AED 3,199	2024
4	USD 949	AED 3,399	2024
5	USD 999	AED 3,599	2024
6	USD 999	AED 3,499	2024
7	USD 1,049	AED 3,699	2024
8	USD 1,099	AED 3,899	2024
9	USD 1,099	AED 3,799	2024

data.tail(10)

Company Name	Model Name	Mobile Weight	RAM	Front Camera \
POCO	F6 Pro 256GB	210g	8GB	920 20MP

921	POCO	C65	64GB	190g	4GB	
5MP						
922	POCO	X7	128GB	195g	6GB	
16MP						
923	POCO	X7 Pro	256GB	207g	8GB	
20MP						
924	POCO	M7	5G 128GB	198g	6GB	
8MP						
925	Poco	Pad	5G 128GB	571g	8GB	
8MP						
926	Poco	Pad	5G 256GB	571g	8GB	
8MP						
927	Samsung	Galaxy Z Fold6	256GB	239g	12GB	10MP, 4MP
(UDC)						
928	Samsung	Galaxy Z Fold6	512GB	239g	12GB	10MP, 4MP
(UDC)						
929	Samsung	Galaxy Z Fold6	1TB	239g	12GB	10MP, 4MP
(UDC)						
	Back Camera		Processor	Battery Capacity		Screen Size
920	108MP		Snapdragon 8+ Gen 2	5160mAh		6.67 inches
921	50MP		MediaTek Helio G85	5000mAh		6.5 inches
922	64MP	MediaTek	Dimensity 8200	5000mAh		6.67 inches
923	108MP	MediaTek	Dimensity 8400	6000mAh		6.67 inches
924	50MP	MediaTek	Dimensity 7025	5110mAh		6.67 inches
925	8MP	Snapdragon	7s Gen 2	10,000mAh		12.1 inches
926	8MP	Snapdragon	7s Gen 2	10,000mAh		12.1 inches
927	50MP	Snapdragon	8 Gen 3	4400mAh		7.6 inches
928	50MP	Snapdragon	8 Gen 3	4400mAh		7.6 inches
929	50MP	Snapdragon	8 Gen 3	4400mAh		7.6 inches
	Launched Price (Pakistan)		Launched Price (India)		Launched Price	
(China)	\					
920		PKR 109,999		INR 44,999		CNY
3,499						
921		PKR 24,999		INR 10,999		
CNY 999						
922		PKR 64,999		INR 22,999		CNY
2,199						

923	PKR 79,999	INR 27,999	CNY
2,699			
924	PKR 39,999	INR 15,999	CNY
1,599			
925	PKR 66,220	INR 23,999	CNY
2,099			
926	PKR 71,220	INR 25,999	CNY
2,299			
927	PKR 604,999	INR 164,999	
¥13,999			
928	PKR 544,999	INR 176,999	CNY
15,999			
929	Not available	INR 200,999	CNY
17,999			

	Launched Price (USA)	Launched Price (Dubai)	Launched Year
920	USD 549	AED 1,999	2024
921	USD 149	AED 599	2024
922	USD 329	AED 1,199	2025
923	USD 399	AED 1,499	2025
924	USD 229	AED 899	2024
925	USD 280	AED 1,029	2024
926	USD 300	AED 1,099	2024
927	USD 1,899	AED 7,199	2024
928	USD 1719	AED 7,699	2024
929	USD 2,259	AED 8,699	2024

### Changing the datatypes

```
data["Launched Year"] = data["Launched Year"].astype(int)

data["Mobile Weight"] = data["Mobile Weight"].replace("g",
 "").astype(float)

data["Battery Capacity"] = data["Battery Capacity"].replace("mAh",
 "").astype(int)
```

### Descriptive Statistics

```
data.describe()
```

	Mobile Weight	Battery Capacity	Launched Year
count	930.000000	930.000000	930.000000
mean	228.267097	5026.163441	2022.193548
std	105.432503	1355.548264	1.862080
min	135.000000	2000.000000	2014.000000
25%	185.000000	4402.500000	2021.000000
50%	194.000000	5000.000000	2023.000000
75%	208.000000	5091.250000	2024.000000
max	732.000000	11200.000000	2025.000000

```
data.nunique()

Company Name      19
Model Name       908
Mobile Weight    148
RAM              11
Front Camera     29
Back Camera      91
Processor        217
Battery Capacity 122
Screen Size      97
Launched Price (Pakistan) 157
Launched Price (India)    147
Launched Price (China)    137
Launched Price (USA)      107
Launched Price (Dubai)    141
Launched Year           11
dtype: int64
```

```
data.isnull().sum()

Company Name      0
Model Name        0
Mobile Weight     0
RAM               0
Front Camera      0
Back Camera       0
Processor         0
Battery Capacity  0
Screen Size       0
Launched Price (Pakistan) 0
Launched Price (India)    0
Launched Price (China)    0
Launched Price (USA)      0
Launched Price (Dubai)    0
Launched Year       0
dtype: int64
```

## Visualising the datasets

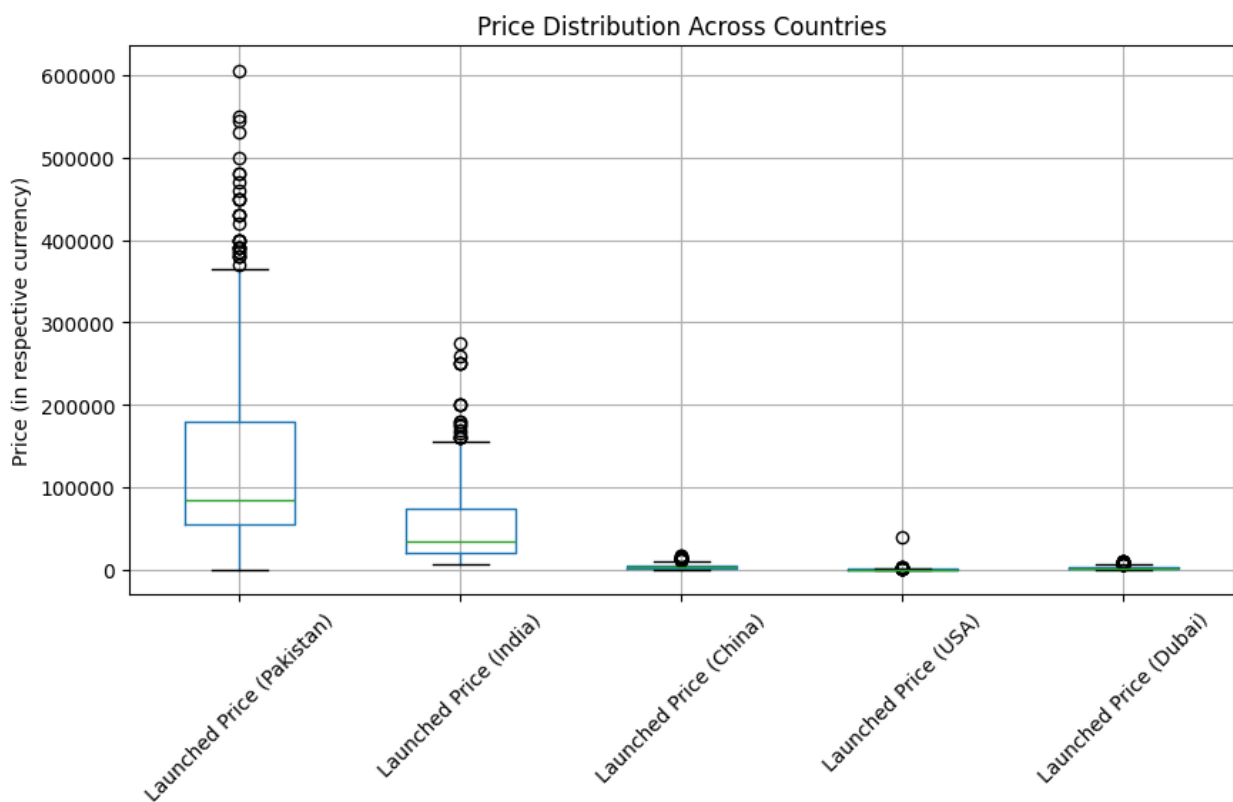
### Price Distribution Across Countries

```
price_cols = [
    "Launched Price (Pakistan)",
    "Launched Price (India)",
    "Launched Price (China)",
    "Launched Price (USA)",
    "Launched Price (Dubai)"
]
for col in price_cols:
```

```

data[col] = (
    data[col]
    .astype(str)
    .str.replace(r"^\d.", "", regex=True)
    .replace("", "0")
    .astype(float)
)
plt.figure(figsize=(10, 5))
data[price_cols].boxplot()
plt.title("Price Distribution Across Countries")
plt.ylabel("Price (in respective currency)")
plt.xticks(rotation=45)
plt.show()

```



### Trend of Prices Over the Years

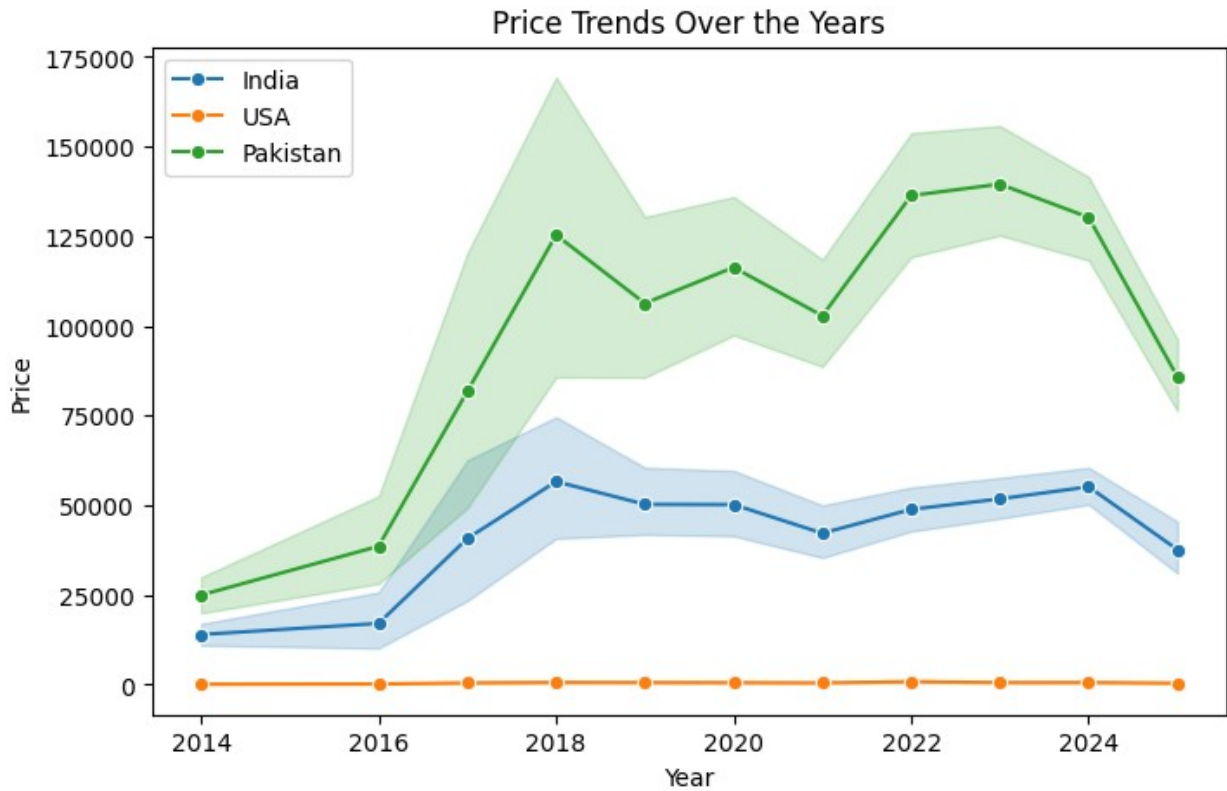
```

plt.figure(figsize=(8, 5))
sns.lineplot(x="Launched Year", y="Launched Price (India)", data=data,
marker="o", label="India")
sns.lineplot(x="Launched Year", y="Launched Price (USA)", data=data,
marker="o", label="USA")
sns.lineplot(x="Launched Year", y="Launched Price (Pakistan)",
data=data, marker="o", label="Pakistan")
plt.title("Price Trends Over the Years")
plt.ylabel("Price")

```



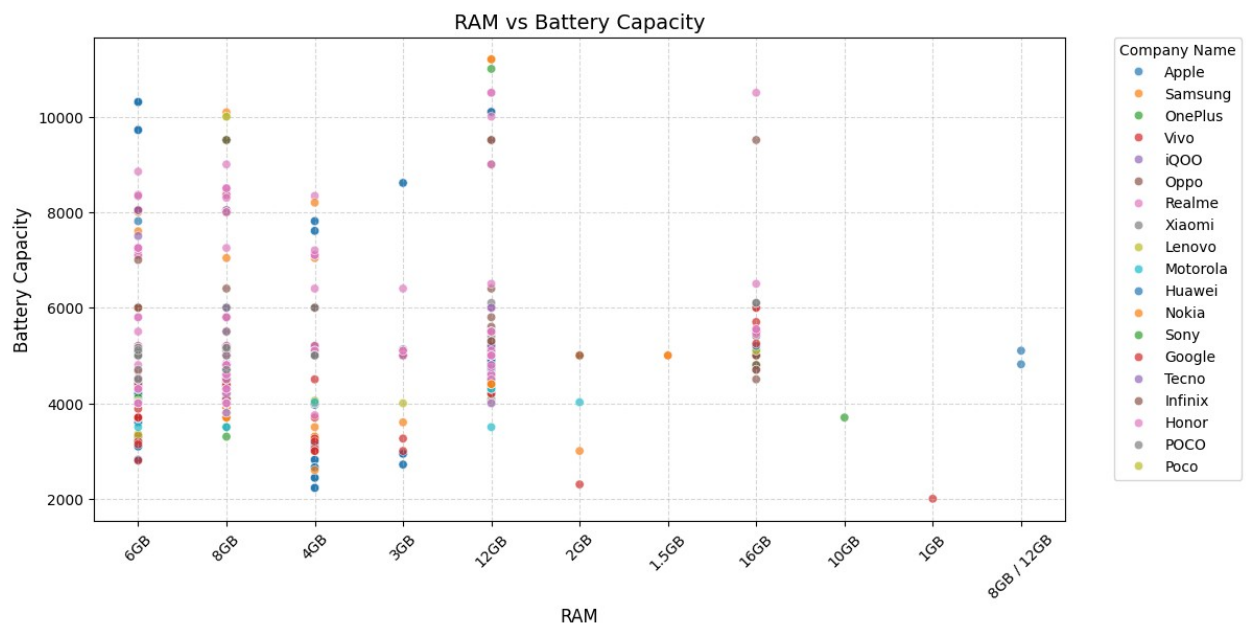
```
plt.xlabel("Year")
plt.legend()
plt.show()
```



## RAM vs Battery Capacity

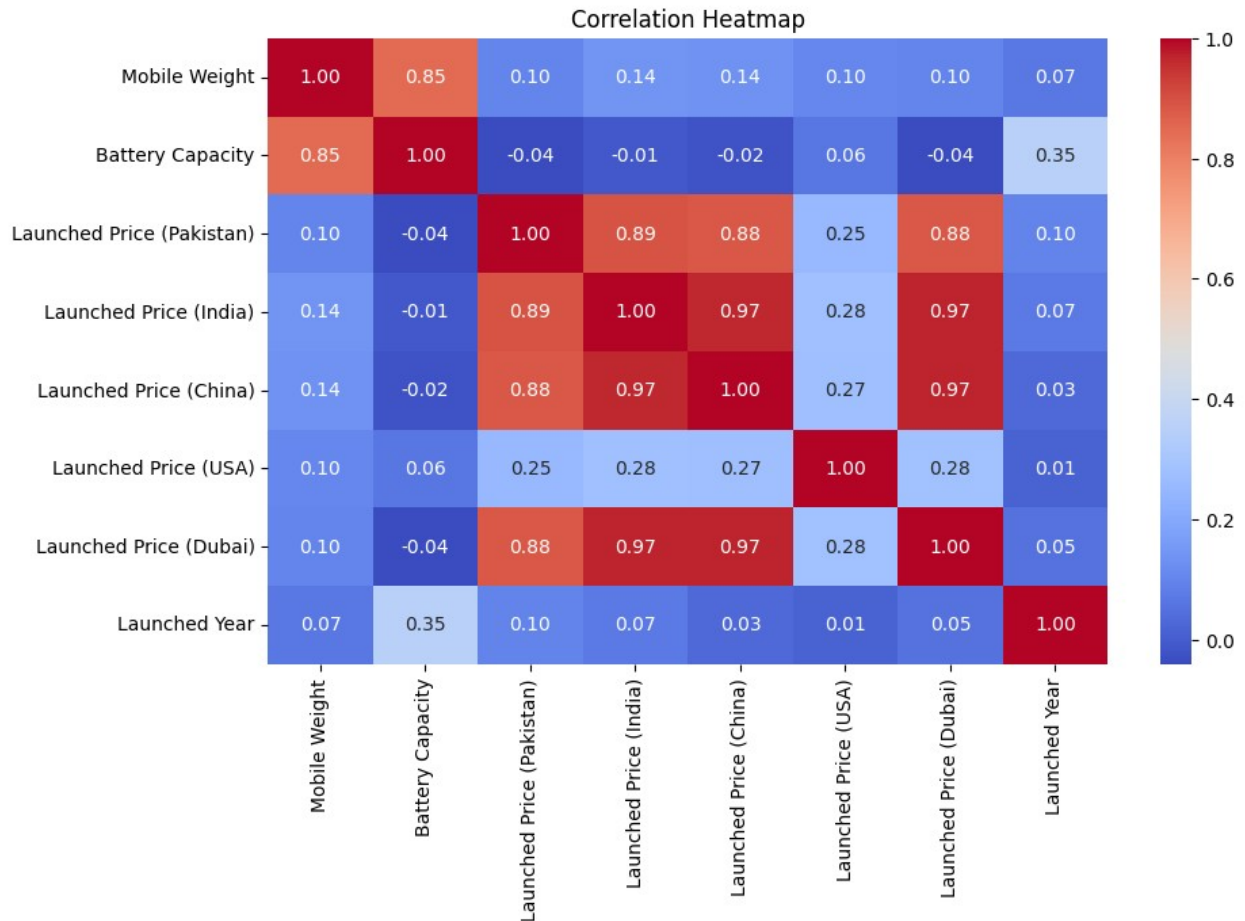
```
plt.figure(figsize=(12, 6))
sns.scatterplot(
    x=data["RAM"],
    y=data["Battery Capacity"],
    hue=data["Company Name"],
    palette="tab10",
    alpha=0.7
)
plt.title("RAM vs Battery Capacity", fontsize=14)
plt.xlabel("RAM", fontsize=12)
plt.ylabel("Battery Capacity", fontsize=12)
plt.xticks(rotation=45)
plt.legend(
    title="Company Name",
    bbox_to_anchor=(1.05, 1),
    loc="upper left",
    borderaxespad=0
)
```

```
plt.grid(True, linestyle="--", alpha=0.5)
plt.show()
```



## Correlation Heatmap

```
numeric_data = data.select_dtypes(include=["number"])
if numeric_data.empty:
    print("No numeric columns found for correlation analysis.")
else:
    plt.figure(figsize=(10, 6))
    sns.heatmap(numeric_data.corr(), annot=True, cmap="coolwarm",
fmt=".2f")
    plt.title("Correlation Heatmap")
    plt.show()
```



## Further Analysis

### The Most Expensive & Cheapest Models

```
most_expensive = data.loc[data["Launched Price (USA)".idxmax()]
cheapest = data.loc[data["Launched Price (USA)".idxmin()]
print("Most Expensive Model:\n", most_expensive)
```

Most Expensive Model:

Company Name	Nokia
Model Name	T21
Mobile Weight	466.0
RAM	4GB
Front Camera	8MP
Back Camera	8MP
Processor	Unisoc T612
Battery Capacity	8200
Screen Size	10.4 inches
Launched Price (Pakistan)	52000.0
Launched Price (India)	17999.0
Launched Price (China)	1250.0
Launched Price (USA)	39622.0

```
Launched Price (Dubai)      870.0
Launched Year                2022
Name: 685, dtype: object
```

```
print("Cheapest Model:\n", cheapest)
```

```
Cheapest Model:
Company Name                Infinix
Model Name                  Smart HD 32GB
Mobile Weight              195.0
RAM                        2GB
Front Camera               5MP
Back Camera                8MP
Processor                  MediaTek Helio A20
Battery Capacity           5000
Screen Size                6.1 inches
Launched Price (Pakistan)  15999.0
Launched Price (India)     5999.0
Launched Price (China)     499.0
Launched Price (USA)       79.0
Launched Price (Dubai)     299.0
Launched Year              2020
Name: 796, dtype: object
```

### The Most Powerful Battery

```
most_powerful_battery = data.loc[data["Battery Capacity"].idxmax()]
print("Model with the Largest Battery Capacity:\n",
most_powerful_battery)
```

```
Model with the Largest Battery Capacity:
Company Name                Samsung
Model Name                  Galaxy Tab S9 Ultra 256GB
Mobile Weight              732.0
RAM                        12GB
Front Camera               12MP + 12MP
Back Camera                13MP + 8MP
Processor                  Snapdragon 8 Gen 2
Battery Capacity           11200
Screen Size                14.6 inches
Launched Price (Pakistan)  350000.0
Launched Price (India)     114999.0
Launched Price (China)     9999.0
Launched Price (USA)       1199.0
Launched Price (Dubai)     4499.0
Launched Year              2023
Name: 166, dtype: object
```