



L O V E L Y
P R O F E S S I O N A L
U N I V E R S I T Y

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PYTHON CA 2 PROJECT

Project Description: Mobile Phone Data Analysis

This project aims to explore and visualize key trends within a mobile phone dataset using Python libraries such as **NumPy**, **Pandas**, **Matplotlib**, and **Seaborn**. The dataset includes features like brand, price, rating, RAM, screen size, refresh rate, and selling platform.

The analysis is divided into five focused objectives:

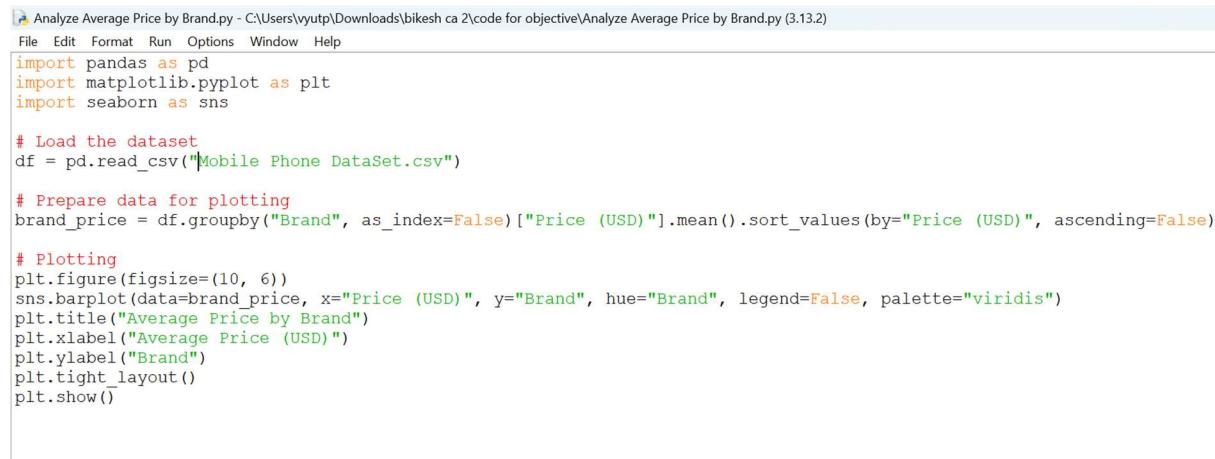
- 1. Brand vs Price:** Analyzing the average price of mobile phones across various brands to understand brand positioning in terms of cost.
- 2. Brand vs Rating:** Exploring the distribution of customer ratings for each brand to evaluate overall consumer satisfaction and brand consistency.

3. **RAM vs Price:** Investigating how RAM size affects the average price of mobile phones to identify value-for-spec trends.
4. **Platform Popularity:** Measuring how many phones are listed on each selling platform to determine which platforms are most commonly used.
5. **Screen Size vs Refresh Rate:** Examining the relationship between screen size and refresh rate to uncover display trends in mobile devices.

Each objective is visualized using a unique graph type to ensure clarity and enhance data storytelling.

❖ Objective 1:

What is the average price of mobile phones across different brands?



```

Analyze Average Price by Brand.py - C:\Users\vyutp\Downloads\bikesh ca 2\code for objective\Analyze Average Price by Brand.py (3.13.2)
File Edit Format Run Options Window Help
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

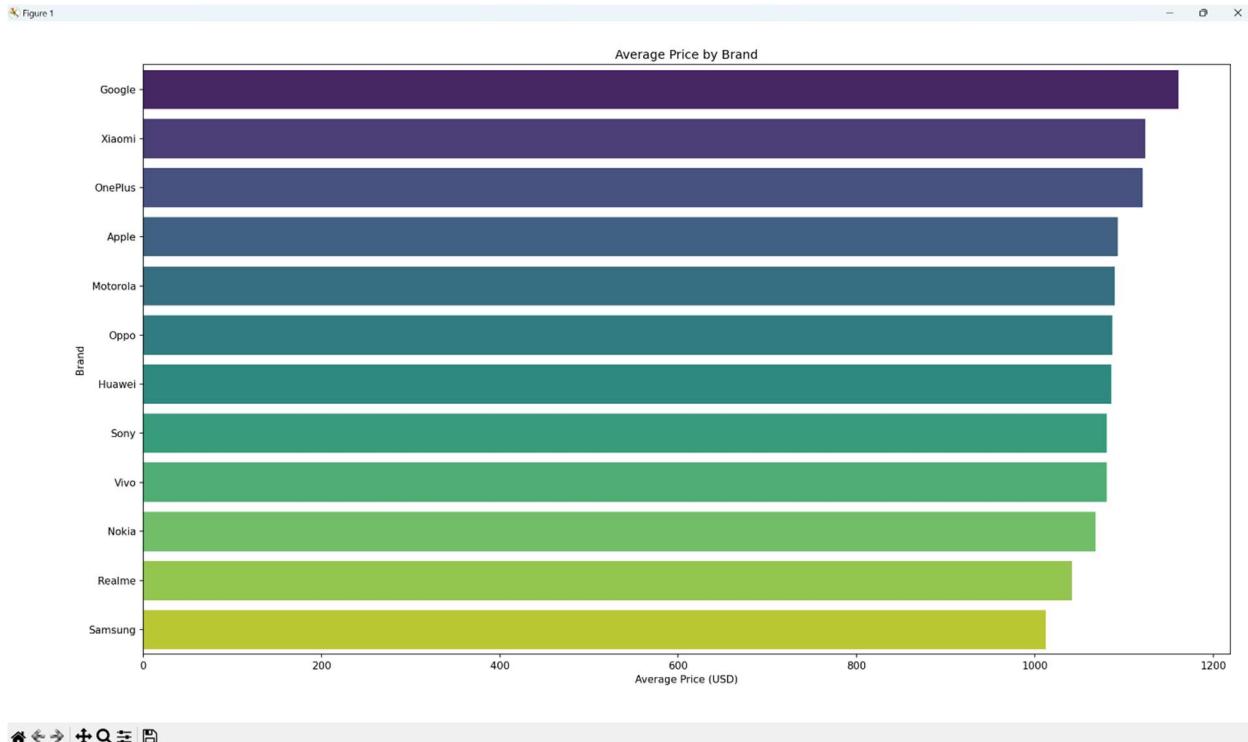
# Load the dataset
df = pd.read_csv("Mobile Phone DataSet.csv")

# Prepare data for plotting
brand_price = df.groupby("Brand", as_index=False)[["Price (USD)"]].mean().sort_values(by="Price (USD)", ascending=False)

# Plotting
plt.figure(figsize=(10, 6))
sns.barplot(data=brand_price, x="Price (USD)", y="Brand", hue="Brand", legend=False, palette="viridis")
plt.title("Average Price by Brand")
plt.xlabel("Average Price (USD)")
plt.ylabel("Brand")
plt.tight_layout()
plt.show()

```

Output :



📌 Objective 2:

How are customer ratings distributed for each brand?

Rating Distribution Across Brands.py - C:\Users\yyutp\Downloads\bikesh ca 2\code for objective\Rating Distribution Across Brands.py (3.13.2)

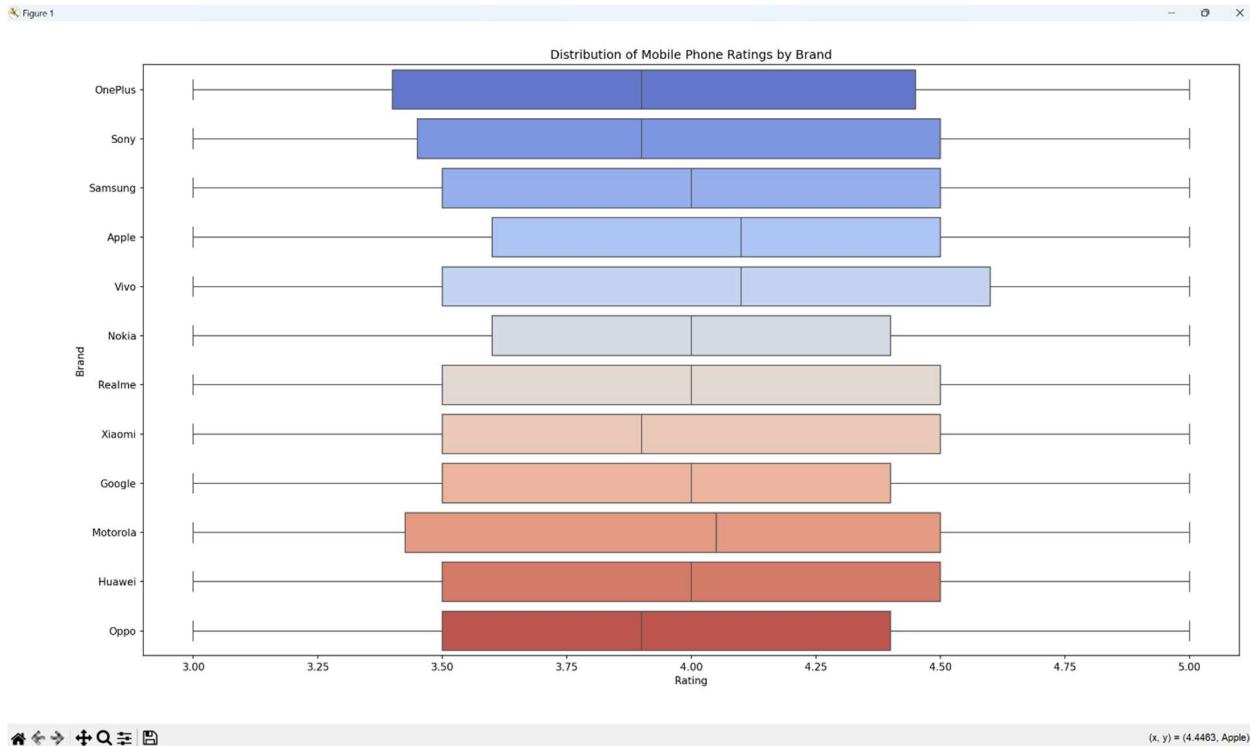
File Edit Format Run Options Window Help

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

# Load the dataset
df = pd.read_csv("Mobile Phone DataSet.csv")

# Plotting
plt.figure(figsize=(10, 6))
sns.boxplot(data=df, x="Rating", y="Brand", hue="Brand", legend=False, palette="coolwarm")
plt.title("Distribution of Mobile Phone Ratings by Brand")
plt.xlabel("Rating")
plt.ylabel("Brand")
plt.tight_layout()
plt.show()
```

Output :



File Edit Format Run Options Window Help (x, y) = (4.4483, Apple)

📌 Objective 3:

Explore How RAM Affects Average Price.py - C:\Users\vyutp\Downloads\bikesh ca 2\code for objective\Explore How RAM Affects Average Price.py (3.13.2)

```

File Edit Format Run Options Window Help
import pandas as pd
import matplotlib.pyplot as plt

# Load the dataset
df = pd.read_csv("Mobile Phone DataSet.csv")

# Prepare data: average price by RAM
ram_price = df.groupby("RAM (GB)") ["Price (USD)"].mean().sort_values(ascending=False)

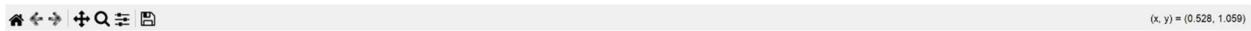
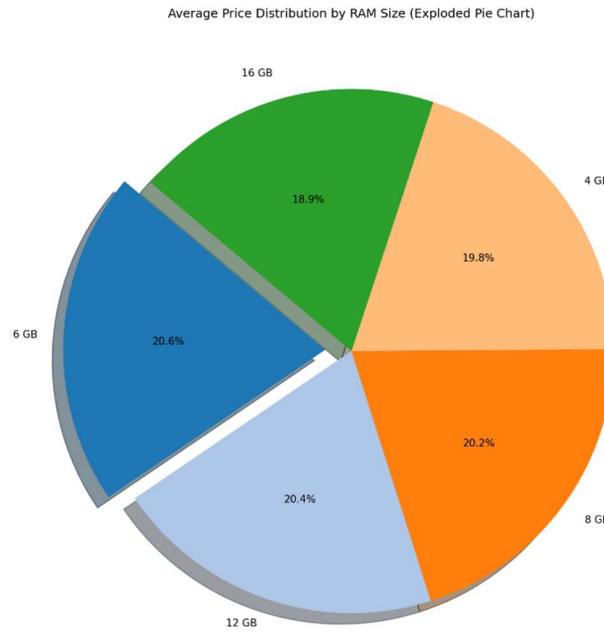
# Explode the largest slice
explode = [0.1 if i == 0 else 0 for i in range(len(ram_price))]

# Generate a unique color for each slice using 'tab20' palette
colors = plt.cm.tab20.colors[:len(ram_price)]

# Plotting
plt.figure(figsize=(8, 8))
plt.pie(ram_price.values, labels=ram_price.index.astype(str) + " GB", autopct="%1.1f%%",
        startangle=140, explode=explode, shadow=True, colors=colors)
plt.title("Average Price Distribution by RAM Size (Exploded Pie Chart)")
plt.tight_layout()
plt.show()

```

Output



📌 Objective 4:

Which selling platform has the most mobile phones listed?

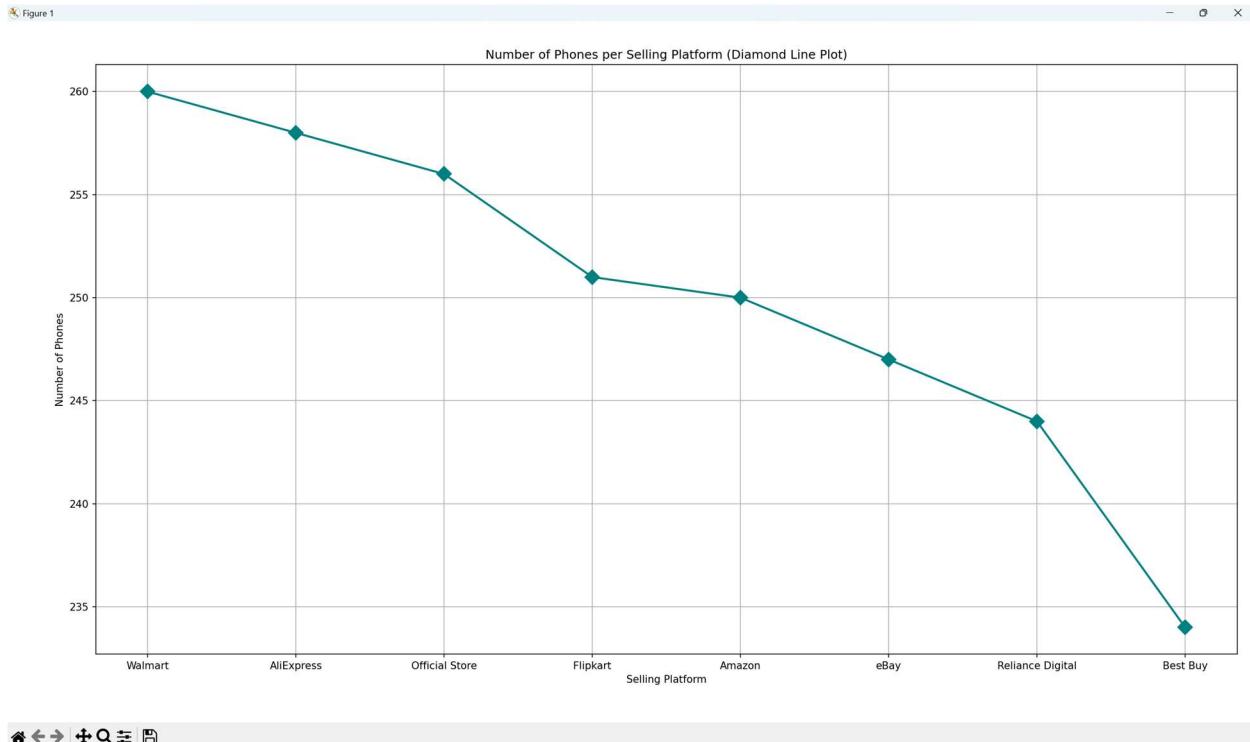
```
Analyze Selling Platform Popularity.py - C:\Users\vyutp\Downloads\bikesh ca 2\code for objective\Analyze Selling Platform Popularity.py (3.13.2)
File Edit Format Run Options Window Help
import pandas as pd
import matplotlib.pyplot as plt

# Load the dataset
df = pd.read_csv("Mobile Phone DataSet.csv")

# Count phones by selling platform
platform_counts = df["Selling Platform"].value_counts()

# Plotting
plt.figure(figsize=(10, 6))
plt.plot(platform_counts.index, platform_counts.values, marker='D', linestyle='-', color='teal', linewidth=2, markersize=10)
plt.title("Number of Phones per Selling Platform (Diamond Line Plot)")
plt.xlabel("Selling Platform")
plt.ylabel("Number of Phones")
plt.grid(True)
plt.tight_layout()
plt.show()
```

Output :



📌 Objective 5:

What is the relationship between refresh rate and screen size in mobile phones?

```

Relationship Between Screen Size and Refresh Rate.py - C:\Users\vyutp\Downloads\bikesh ca 2\code for objective\Relationship Between Screen Size and Refresh Rate.py (3.13.2)
File Edit Format Run Options Window Help
import pandas as pd
import matplotlib.pyplot as plt

# Load the dataset
df = pd.read_csv("Mobile Phone DataSet.csv")

# Group by refresh rate and get average screen size
screen_vs_refresh = df.groupby("Refresh Rate (Hz)")["Screen Size (inches)"].mean().reset_index()

# Sort by refresh rate
screen_vs_refresh = screen_vs_refresh.sort_values(by="Refresh Rate (Hz)")

# Plotting
plt.figure(figsize=(10, 6))
plt.plot(screen_vs_refresh["Refresh Rate (Hz)"], screen_vs_refresh["Screen Size (inches)"],
         marker='o', linestyle='-', color='purple', linewidth=2, markersize=8)
plt.title("Average Screen Size vs Refresh Rate (Line Plot)")
plt.xlabel("Refresh Rate (Hz)")
plt.ylabel("Average Screen Size (inches)")
plt.grid(True)
plt.tight_layout()
plt.show()

```

Output :

Figure 1

