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**DS Assignment**

# Scenario:

You are analyzing the launch prices of Samsung mobile phones over the past five years (2020–2024). Use the data provided below to answer the questions using Python code.

# Samsung Mobile Phones Dataset:

|  |  |  |
| --- | --- | --- |
| Model | Launch Year | Price (USD) |
| Galaxy S20 | 2020 | 999 |
| Galaxy Note 20 | 2020 | 1199 |
| Galaxy S21 | 2021 | 799 |
| Galaxy Z Fold 3 | 2021 | 1799 |
| Galaxy S22 | 2022 | 899 |
| Galaxy Z Flip 4 | 2022 | 999 |
| Galaxy S23 | 2023 | 999 |
| Galaxy Z Fold 5 | 2023 | 1899 |
| Galaxy S24 | 2024 | 1099 |
| Galaxy Z Flip 6 | 2024 | 1099 |

## 1. Total number of models launched each year

**Python Code:**launch\_data = [2020, 2020, 2021, 2021, 2022, 2022, 2023, 2023, 2024, 2024]  
from collections import Counter  
models\_per\_year = Counter(launch\_data)  
print(models\_per\_year)

## 2. Average launch price per year

**Python Code:**prices = [999, 1199, 799, 1799, 899, 999, 999, 1899, 1099, 1099]  
years = [2020, 2020, 2021, 2021, 2022, 2022, 2023, 2023, 2024, 2024]  
from collections import defaultdict  
year\_price = defaultdict(list)  
for year, price in zip(years, prices):  
 year\_price[year].append(price)  
average\_price\_per\_year = {year: sum(p)/len(p) for year, p in year\_price.items()}  
print(average\_price\_per\_year)

## 3. Overall average price across all five years

**Python Code:**overall\_avg\_price = sum(prices) / len(prices)  
print(overall\_avg\_price)

## 4. Highest priced model per year

**Python Code:**model\_names = ["Galaxy S20", "Galaxy Note 20", "Galaxy S21", "Galaxy Z Fold 3",  
 "Galaxy S22", "Galaxy Z Flip 4", "Galaxy S23", "Galaxy Z Fold 5",  
 "Galaxy S24", "Galaxy Z Flip 6"]  
year\_model\_price = list(zip(years, model\_names, prices))  
highest\_price\_per\_year = {}  
for year in set(years):  
 year\_models = [(model, price) for y, model, price in year\_model\_price if y == year]  
 highest = max(year\_models, key=lambda x: x[1])  
 highest\_price\_per\_year[year] = highest  
print(highest\_price\_per\_year)

## 5. Year with the most expensive Samsung phone launched

**Python Code:**most\_expensive = max(zip(model\_names, prices, years), key=lambda x: x[1])  
print(most\_expensive)

## 6. Categorize models into Mid-Range (<1000 USD) and Flagship (>=1000 USD)

**Python Code:**mid\_range = [model for model, price in zip(model\_names, prices) if price < 1000]  
flagship = [model for model, price in zip(model\_names, prices) if price >= 1000]  
print("Mid-Range:", mid\_range)  
print("Flagship:", flagship)

## 7. Percentage of Mid-Range vs Flagship models

**Python Code:**mid\_range\_count = len(mid\_range)  
flagship\_count = len(flagship)  
total = mid\_range\_count + flagship\_count  
mid\_range\_percent = (mid\_range\_count / total) \* 100  
flagship\_percent = (flagship\_count / total) \* 100  
print("Mid-Range %:", mid\_range\_percent)  
print("Flagship %:", flagship\_percent)

## 8. Predicted price for 2025 (assuming 5% price increase)

**Python Code:**last\_avg\_2024 = sum([1099, 1099]) / 2  
predicted\_2025 = last\_avg\_2024 \* 1.05  
print(predicted\_2025)

## 9. Insights

**Python Code:**print("""  
Samsung maintains a strong flagship segment while offering mid-range devices.  
Foldable phones from 2021 onward significantly raised average launch prices.  
Galaxy Z Fold 5 in 2023 was the highest priced model.  
""")

**10. Find the day when the highest price of Samsung mobile**

**Python Code:**

# Samsung Mobile Phones Dataset

models = [

"Galaxy S20", "Galaxy Note 20", "Galaxy S21", "Galaxy Z Fold 3",

"Galaxy S22", "Galaxy Z Flip 4", "Galaxy S23", "Galaxy Z Fold 5",

"Galaxy S24", "Galaxy Z Flip 6"

]

prices = [

999, 1199, 799, 1799,

899, 999, 999, 1899,

1099, 1099

]

# Find the model with the highest price

max\_price\_index = prices.index(max(prices))

highest\_price\_model = models[max\_price\_index]

highest\_price = prices[max\_price\_index]

print(f"The Samsung mobile with the highest price is {highest\_price\_model} at ${highest\_price}.")