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.
""")
```