NUMPY EXERCISES

Exercise 1: Create a 5X2 integer array from a range between 100 to 200 such that the difference between each element is 10
Expected Output:

```
Creating 5X2 array using numpy.arange
[[100 110]
 [120 130]
 [140 150]
 [160 170]
 [180 190]]
```

Exercise 2: Following is the provided numPy array. return array of items in the third column from all rows

```
import numpy
sampleArray = numpy.array([[11 ,22, 33], [44, 55, 66], [77, 88, 99]])
```

Expected Output:

```
Printing Input Array
[[11 22 33]
 [44 55 66]
 [77 88 99]]

 Printing array of items in the third column from all rows
[33 66 99]
```

Exercise 3: Add the following two NumPy arrays and Modify a result array by calculating the square of each element

```
import numpy

arrayOne = numpy.array([[5, 6, 9], [21 ,18, 27]])
arrayTwo = numpy.array([[15 ,33, 24], [4 ,7, 1]])
```

Expected Output:

```
addition of two arrays is

[[20 39 33]
 [25 25 28]]

Result array after calculating the square root of all elements

[[ 400 1521 1089]
 [ 625  625  784]]
```

PANDAS EXERCISES

This exercise contains 10 questions. The solution provided for each question. Each question includes a specific Pandas topic you need to learn, When you complete each question you get more familiar with data analysis using pandas.

DATASET:

Question 1: From given data set print first and last five rows

Question 2: Clean data and update the CSV file
Replace all column values which contain '?' and n.a with NaN.

Question 3: Find the most expensive car company name
Print the most expensive car's company name and price.

Question 4: Print All Toyota Cars details

Question 5: Count total cars per company

Question 6: Find each company's Highest price car

Question 7: Find the average mileage of each car making company

Question 8: Sort all cars by Price column

Question 9: Concatenate two data frames using the following conditions
Create two data frames using the following two Dicts, Concatenate those two data frames and create a key for each data frame.

GermanCars = {'Company': ['Ford', 'Mercedes', 'BMV', 'Audi'], 'Price': [23845, 171995, 135925 , 71400]}
japaneseCars = {'Company': ['Toyota', 'Honda', 'Nissan', 'Mitsubishi '], 'Price': [29995, 23600, 61500 , 58900]}

Question 10: Merge two data frames using the following condition
Create two data frames using the following two Dicts, Merge two data frames, and append the second data frame as a new column to the first data frame.

Car_Price = {'Company': ['Toyota', 'Honda', 'BMV', 'Audi'], 'Price': [23845, 17995, 135925 , 71400]}
car_Horsepower = {'Company': ['Toyota', 'Honda', 'BMV', 'Audi'], 'horsepower': [141, 80, 182 , 160]}

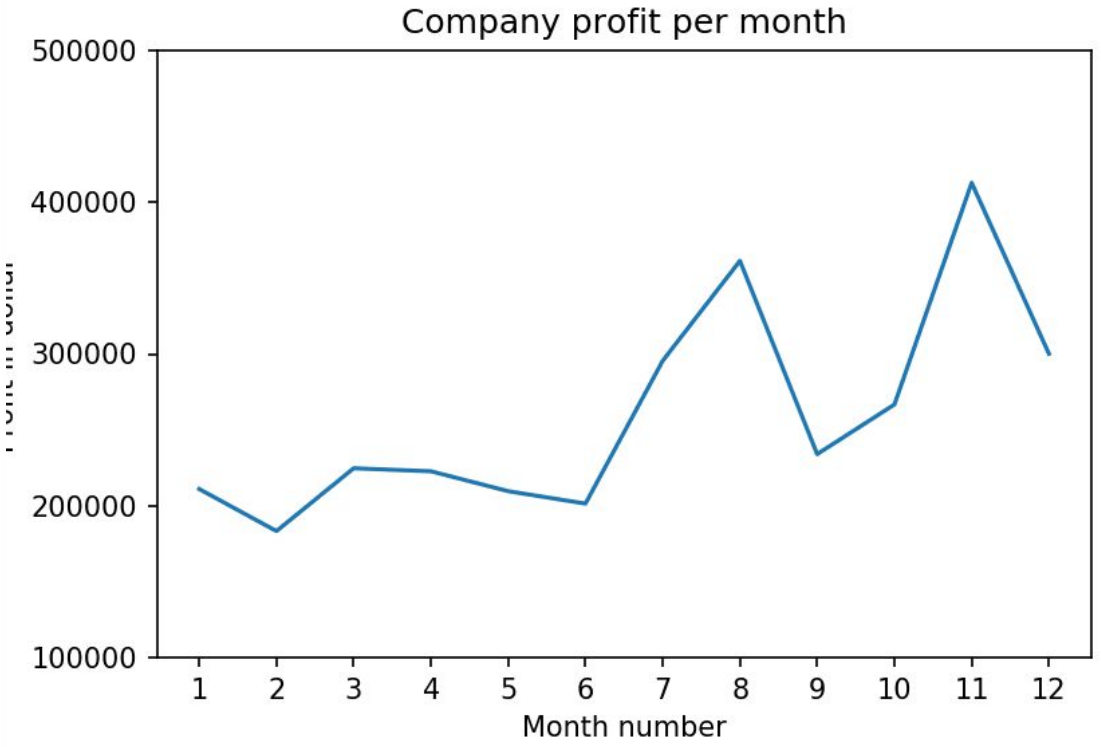
MATPLOTLIB EXERCISES

Exercise 1: Read Total profit of all months and show it using a line plot

Total profit data provided for each month. Generated line plot must include the following properties: –

- **X label name = Month Number**
- **Y label name = Total profit**

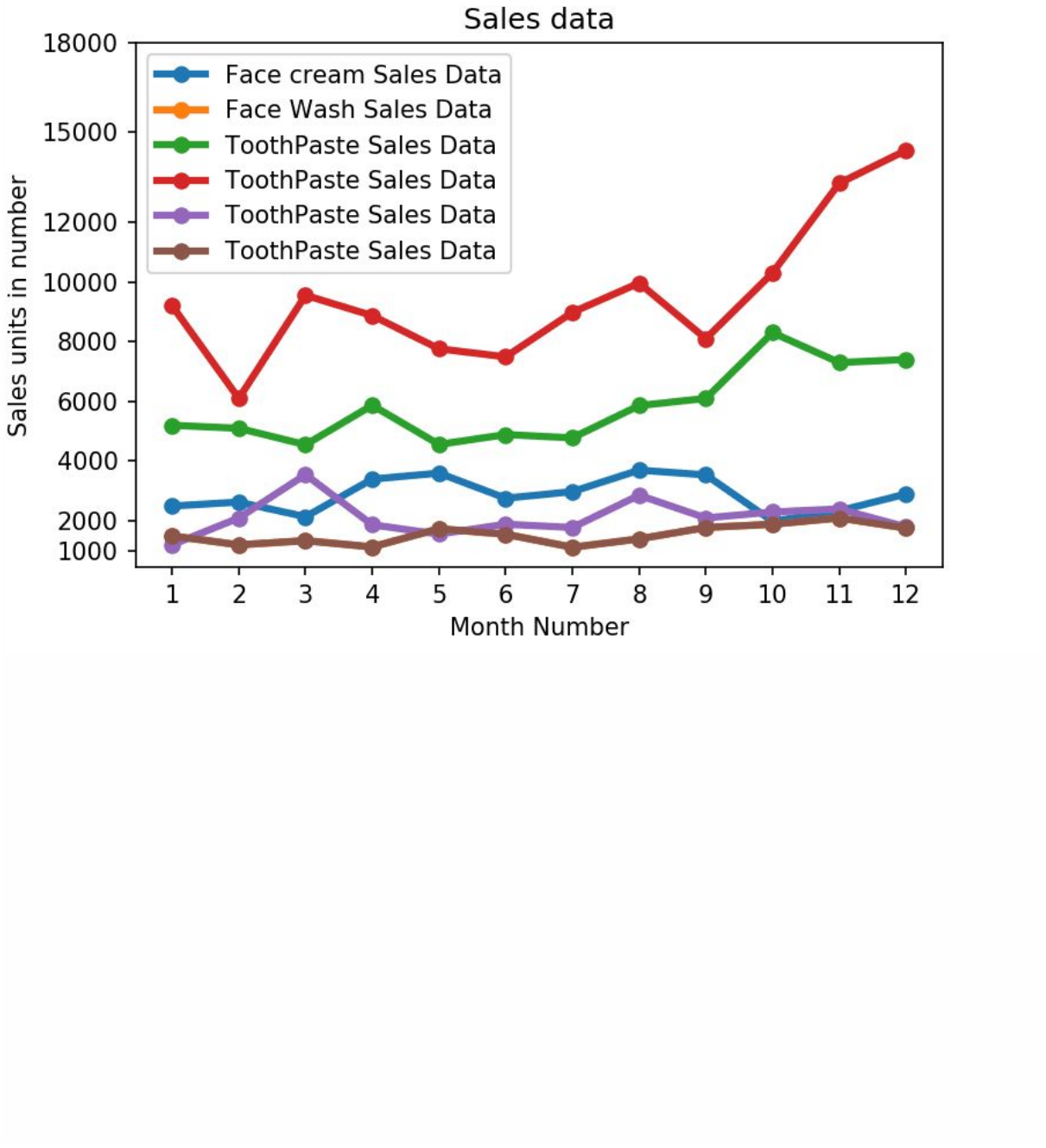
The line plot graph should look like this.



Exercise Question 2: Read all product sales data and show it using a multi line plot

Display the number of units sold per month for each product using multi line plots. (i.e., Separate Plotline for each product).

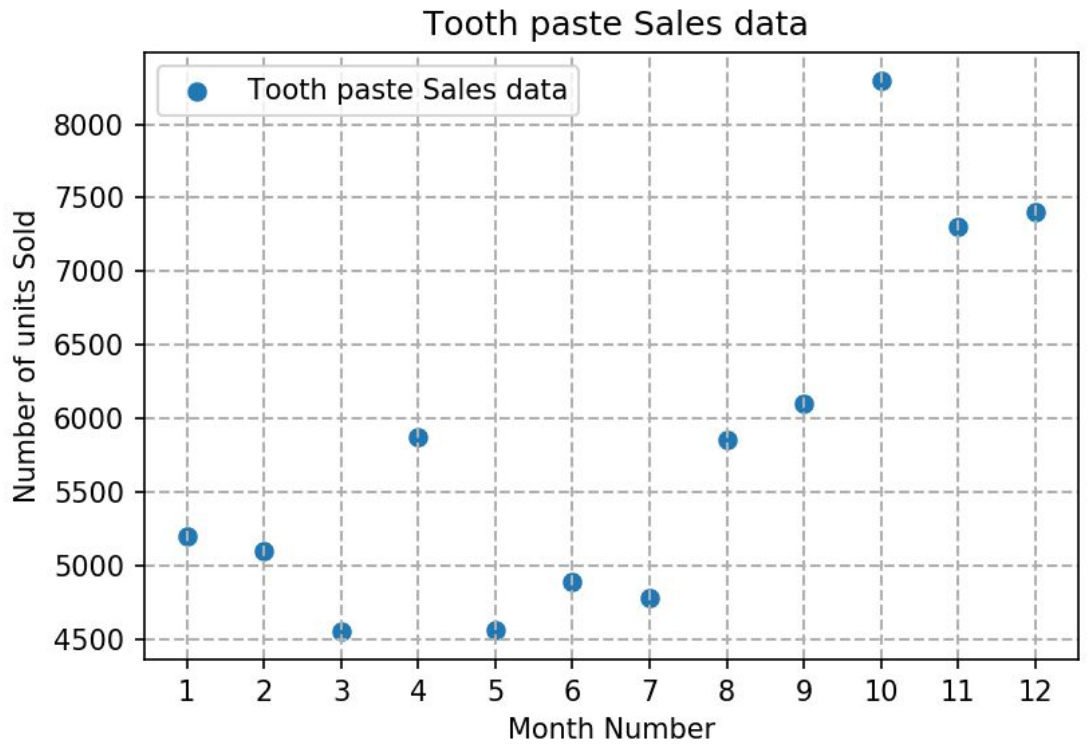
The graph should look like this.



Exercise Question 3: Read toothpaste sales data of each month and show it using a scatter plot

Also, add a grid in the plot. gridline style should “–“.

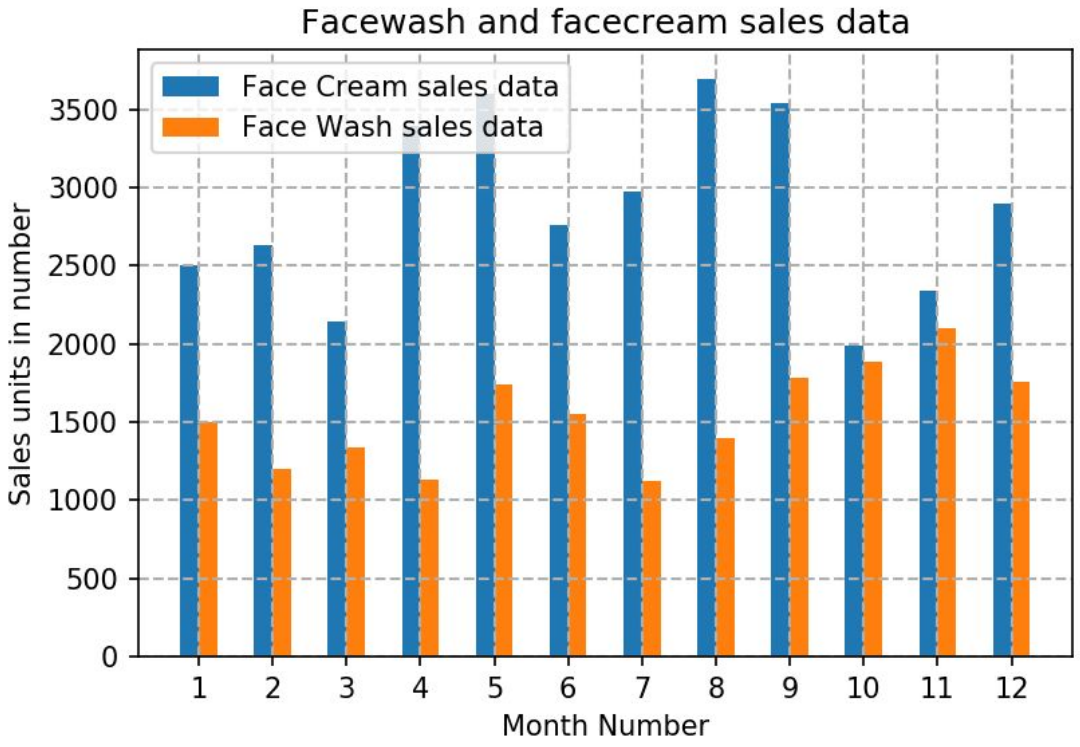
The scatter plot should look like this.



Exercise Question 4: Read face cream and facewash product sales data and show it using the bar chart

The bar chart should display the number of units sold per month for each product. Add a separate bar for each product in the same chart.

The bar chart should look like this.



Exercise Question 5: Calculate total sale data for last year for each product and show it using a Pie chart

Note: In Pie chart display Number of units sold per year for each product in percentage.

The Pie chart should look like this.