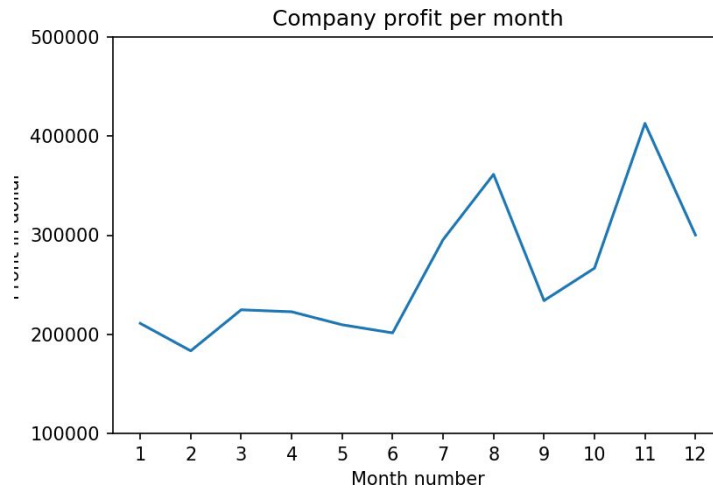
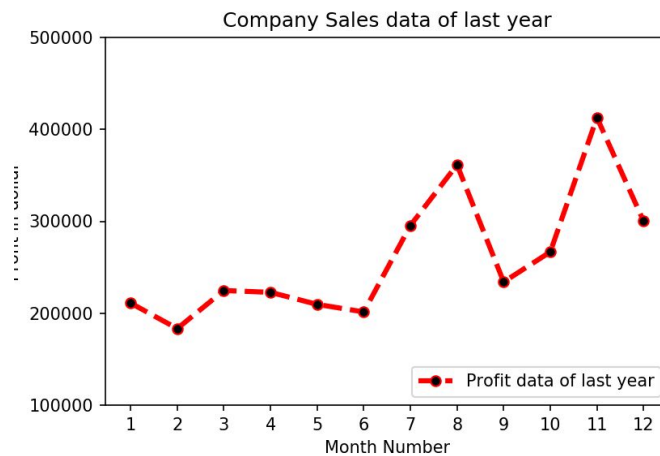


1. Read Total profit of all months and show it using a line plot.
  - a. X label name = Month Number
  - b. Y label name = Total profit

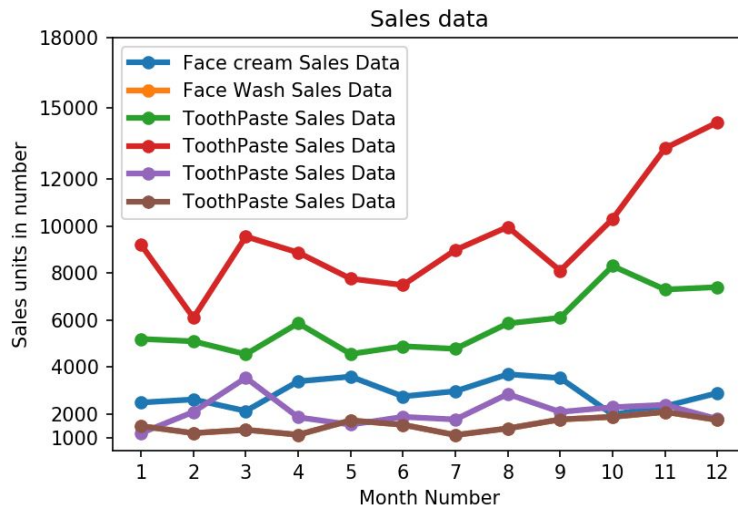


2. Get Total profit of all months and show line plot with the following Style properties
  - a. Line Style dotted and Line-color should be red
  - b. Show legend at the lower right location.
  - c. X label name = Month Number
  - d. Y label name = Sold units number
  - e. Add a circle marker.
  - f. Line marker color as read
  - g. Line width should be 3

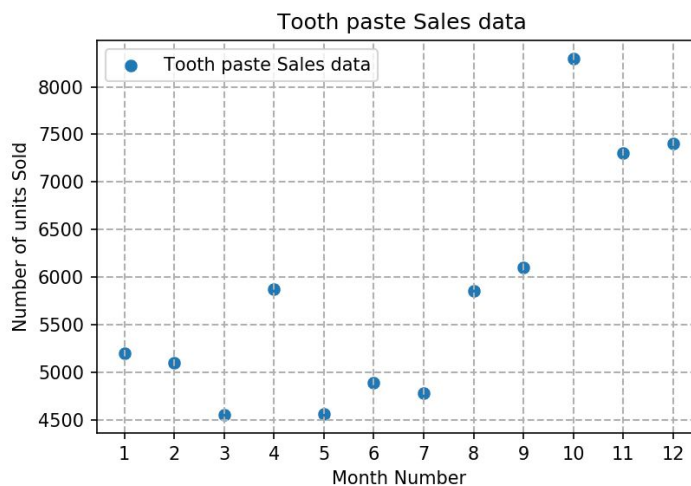


3. Read all product sales data and show it using a multiline plot  
 Display the number of units sold per month for each product using multiline plots. (i.e.,

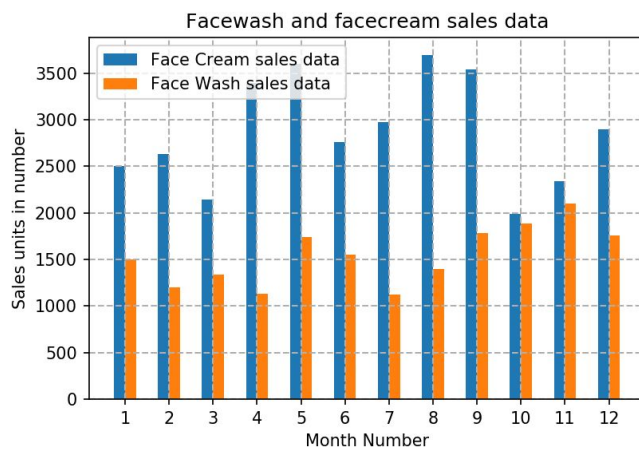
separate Plotline for each product ).



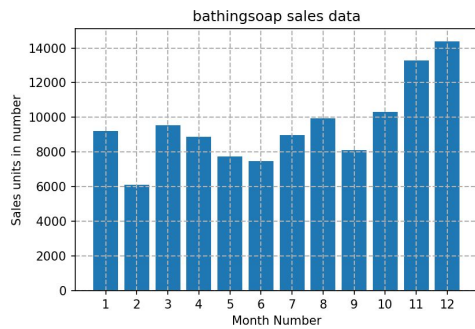
- Read toothpaste sales data of each month and show it using a scatter plot add a grid in the plot. gridline style should “-“.



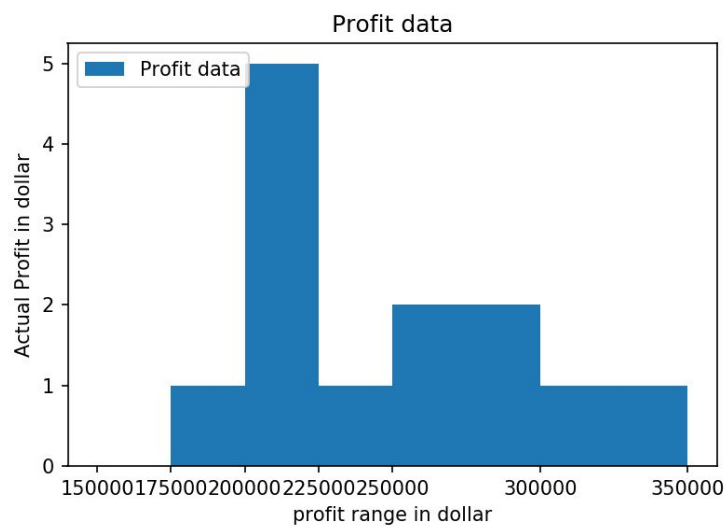
- Read face cream and facewash product sales data and show it using the bar chart The bar chart should display the number of units sold per month for each product. Add a separate bar for each product in the same chart.



- Read sales data of bathing soap of all months and show it using a bar chart.  
Save this plot to your hard disk.



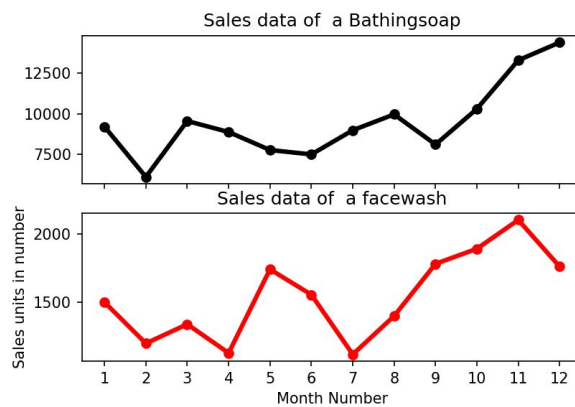
- Read the total profit of each month and show it using the histogram to see most common profit ranges.



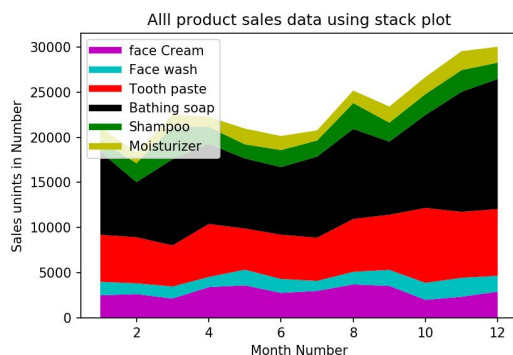
- Calculate total sale data for last year for each product and show it using a Pie chart.  
Note: In Pie chart display Number of units sold per year for each product in percentage.



9. Read Bathing soap facewash of all months and display it using the Subplot



10. Read all product sales data and show it using the stack plot



11. Create a line plot showing the number of marriages and divorces per capita in the U.S. between 1867 and 2014.  
Label both of the lines and show the legend.  
Don't forget to label your axes!
12. Use the ggplot style on ex 1.
13. Create a vertical bar chart comparing the number of marriages and divorces per capita in the U.S. between 1900, 1950, and 2000.
14. Create a horizontal bar chart that compares the deadliest actors in Hollywood. Sort the actors by their kill count and label each bar with the corresponding actor's name.
15. Create a pie chart showing the fraction of all Roman Emperors that were assassinated. Make sure that the pie chart is an even circle, labels the categories, and shows the percentage breakdown of the categories.
16. Create a scatter plot showing the relationship between the total revenue earned by arcades and the number of Computer Science PhDs awarded in the U.S. between 2000 and 2009.
17. Use the [FiveThirtyEight](#) style to visualize the number of marriages and divorces per capita in the U.S. between 1867 and 2014.
18. Create a custom style that does the following:  
Uses the color cycle: 1f77b4, ff7f0e  
Sets the line width to 2.5  
Sets the x- and y-tick labels to size 12  
Use [this example style file](#) as a guide.
19. Create the same chart from Exercise 8 using your custom style.

20. Create a histogram showing the distribution of the Roman Emperor's reign lengths. What does this distribution tell you?
21. Create two box plots to compare the earnings of recent college graduates in majors that are primarily composed of women to the earnings of recent college graduates in majors that are primarily composed of men.
  - a. Does there appear to be a significant difference? (Hint: Use notches.)
  - b. Remember to label the categories!
22. Use subplots to create a figure with two separate line plots showing the number of marriages and divorces per capita in the U.S. between 1867 and 2014. Place the two line plots on top of each other so the years line up.
23. Use small multiples to compare the trends in gender ratio of 17 U.S. college majors between 1970 and 2011. Make sure all of the subplots have the same axes and ranges.
  - a. Only label the y-axes of the subplots on the left
  - b. only label the x-axes of the subplots on the bottom.

מקורות מידע

#### Matplotlib

<https://towardsdatascience.com/matplotlib-tutorial-learn-basics-of-pythons-powerful-plotting-library-b5d1b8f67596>  
<https://www.datacamp.com/community/tutorials/matplotlib-tutorial-python>  
<https://www.tutorialspoint.com/matplotlib/index.htm>  
<https://github.com/rougier/matplotlib-tutorial>

#### Seaborn

<https://elitedatascience.com/python-seaborn-tutorial>  
<https://www.tutorialspoint.com/seaborn/index.htm>  
<https://www.datacamp.com/community/tutorials/seaborn-python-tutorial>  
<https://www.kaggle.com/kanncaa1/seaborn-tutorial-for-beginners>  
<https://towardsdatascience.com/data-visualization-using-seaborn-fc24db95a850>

#### Bokeh

<https://towardsdatascience.com/data-visualization-with-bokeh-in-python-part-one-getting-started-a11655a467d4>  
<https://programminghistorian.org/en/lessons/visualizing-with-bokeh>