**Food for Thought**

How might you go about creating a horizontal boxplot using the matplotlib library?

What commands are used for changing the title, axes, and colors of a plot?

**What is Matplotlib?**

A plotting library for Python.

*Environments*

- Python scripts, Python shell, Jupyter notebook, web application servers

*Uses*

- Produce 2D and 3D graphs, charts, and figures for scientific application, user interface, and web applications

*Applications*

- Academia (e.g. physics, chemistry, neuroscience, astronomy)
- National Research Labs (e.g. Mars rovers, Hubble Telescope)
- Industry

**Installing Matplotlib**

*Matplotlib and its dependencies are available as packages for macOS, Windows and Linux distributions.*

```
python -m pip install -U pip
python -m pip install -U matplotlib
```

**Examples**

*Create a simple plot*

```
import matplotlib.pyplot as plt

plt.plot([1, 2, 3, 4], [1, 4, 9, 16])

plt.show()
```

*Add a title & labels*

```
plt.title('A simple plot')
plt.xlabel('X axis')
plt.ylabel('Y axis')
```

*Multiple plots in one figure*

```
plt.subplot(2, 1, 1)
plt.plot([1, 2, 3, 4], [1, 4, 9, 16], 'go')
plt.title('1st subplot')

plt.subplot(2, 1, 2)
plt.plot([1, 2, 3, 4], [1, 8, 27, 64], 'r^')
plt.title('2nd subplot')

plt.suptitle('My sub-plots')
plt.show()
```
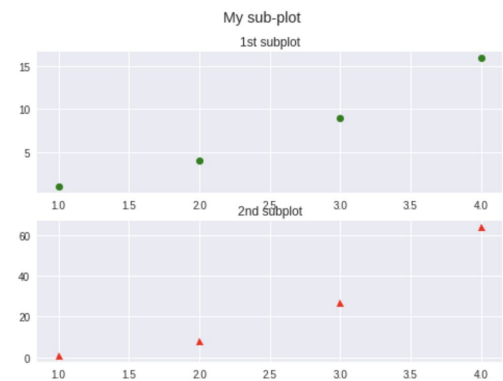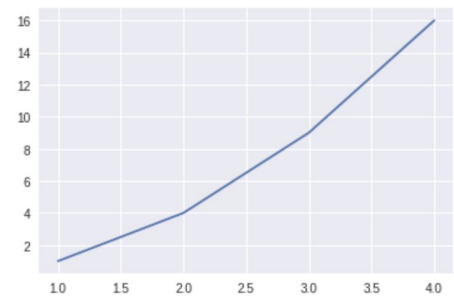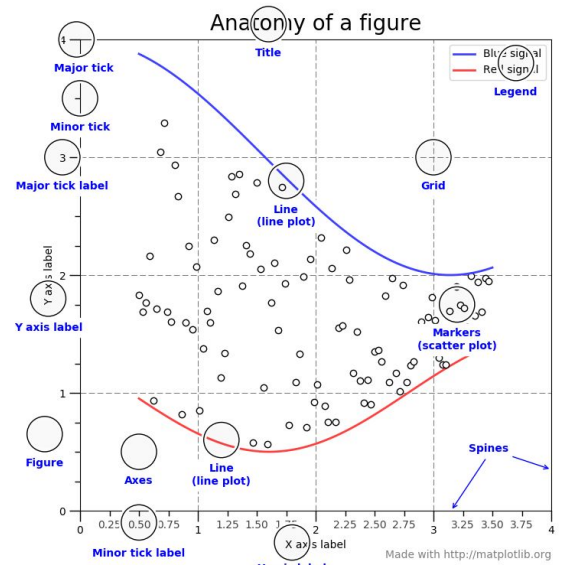
**Sources**

- Documentation: https://matplotlib.org/contents.html#
- MatPlotLib gallery: https://matplotlib.org/gallery.html
- Cheat sheet: https://python-graph-gallery.com/wp-content/uploads/Matplotlib_cheatsheet_datacamp.png
- Tutorials: https://matplotlib.org/3.1.1/tutorials/index.html || https://www.edureka.co/blog/python-matplotlib-tutorial/

**Exercise Questions**

1. Create a bar graph to represent the distribution of different operating systems each student in this class use.

2. Create a scatter plot with these points: (2,0), (1,20), (3,6), (5, 12)