```
In [ ]: import pandas as pd
        import seaborn as sns
        import plotly.express as px

        import matplotlib.pyplot as plt
```

```
In [ ]: import plotly.io as pio
        pio.renderers.default = "plotly_mimetype+notebook"
```

Matplotlib

For this exercise, we have written the following code to load the stock dataset built into plotly express.

```
In [ ]: stocks = px.data.stocks()
        stocks.head()
```

Out[ ]:

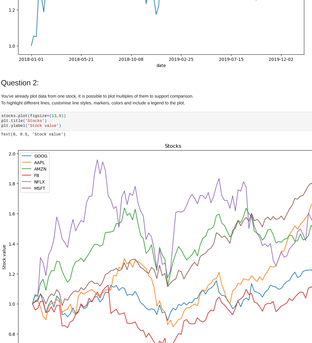
	date	GOOG	AAPL	AMZN	FB	NFLX	MSFT
0	2018-01-01	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1	2018-01-08	1.018172	1.011943	1.061881	1.059998	1.052628	1.015988
2	2018-01-15	1.032098	1.019771	1.053240	0.970243	1.049980	1.020524
3	2018-01-22	1.066760	0.980087	1.140676	1.016858	1.307681	1.066961
4	2018-01-29	1.008773	0.917165	1.163374	1.018357	1.273527	1.040708

Question 1:

Select a stock and create a suitable plot for it. Make sure the plot is readable with relevant information, such as date, values.

```
In [ ]: stocks.set_index('date', inplace=True)
        plt.figure(figsize=(12,8))
        plt.plot(stocks['NFLX'])
        plt.title('Netflix stock')
        plt.xlabel('Stock value')
```

```
Out[ ]: Text(0, 0.5, 'Stock value')
```



Question 2:

You've already plot data from one stock. It is possible to plot multiples of them to support comparison.
To highlight different lines, customise line styles, markers, colors and include a legend to the plot.

```
In [ ]: stocks.plot(figsize=(13,9))
        plt.title('Stocks')
        plt.xlabel('Stock value')
```

```
Out[ ]: Text(0, 0.5, 'Stock value')
```

Seaborn

First, load the tips dataset

```
In [ ]: tips = sns.load_dataset('tips')
        tips.head()
```

Out[ ]:

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4

Question 3:

Let's explore this dataset. Pose a question and create a plot that support drawing answers for your question.

Some possible questions:

- Are there differences between male and female when it comes to giving tips?
- What attribute correlate the most with tip?

```
In [ ]: # Question: Are there differences between smokers and non smokers
        # when it comes to giving tips?

        sns.relplot(x='total_bill', y='tip', data=tips, hue='smoker')
        plt.show()

        # you can see in the plot that smokers on average give more tips
        # than non smokers when the bill is above 25 euros.
```

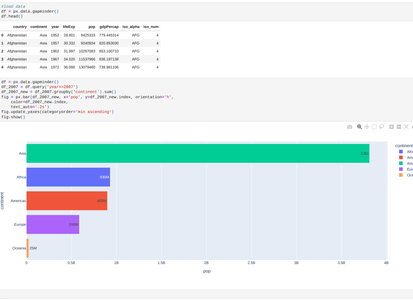
Plotly Express

Question 4:

Redo the above exercises (challenges 2 & 3) with plotly express. Create diagrams which you can interact with.

```
In [ ]: df = px.data.stocks()
        fig = px.line(df, x='date', y='NFLX', title='Netflix stock')
        fig.show()
```


```
In [ ]: df = px.data.stocks()
        fig = px.line(df, x='date', y=['GOOG','AAPL','AMZN','FB','NFLX','MSFT'],
                      title='Netflix stock')
        fig.show()
```




```
In [ ]: df = px.data.tips()
        fig = px.scatter(df, x='total_bill', y='tip',
                         color='smoker')
        fig.show()
```


The stocks dataset

Hints:

- Turn stocks dataframe into a structure that can be picked up easily with plotly express

```
In [ ]: df = px.data.stocks()
        fig = px.line(df, x='date', y=['GOOG','AAPL','AMZN','FB','NFLX','MSFT'],
                      title='Stocks')
        fig.show()
```


The tips dataset

```
In [ ]: df = px.data.tips()
        fig = px.scatter(df, x='total_bill', y='tip', color='sex',
                         facet_col='smoker', facet_row='time')
        fig.show()
```


Question 5:

Recreate the barplot below that shows the population of different continents for the year 2007.

Hints:

- Extract the 2007 year data from the dataframe. You have to process the data accordingly
- use px.bar
- Add different colors for different continents
- Sort the order of the continent for the visualisation. Use sort layout setting
- Add text to each bar that represents the population

```
In [ ]: #Load data
        df = px.data.gapminder()
        df.head()
```

Out[ ]:

	country	continent	year	lifeExp	pop	gdpPercap	iso_alpha	iso_num
0	Afghanistan	Asia	1952	28.801	8425333	779.445314	AFG	4
1	Afghanistan	Asia	1957	30.332	9240934	820.853030	AFG	4
2	Afghanistan	Asia	1962	31.997	10267083	853.100710	AFG	4
3	Afghanistan	Asia	1967	34.020	11537966	836.197138	AFG	4
4	Afghanistan	Asia	1972	36.088	13079460	739.981106	AFG	4

```
In [ ]: df = px.data.gapminder()
        df_2007 = df[df['year'] == 2007]
        df_2007_new = df_2007.groupby('continent').sum()
        fig = px.bar(df_2007_new, x='pop', y=df_2007_new.index, orientation='h',
                     color=df_2007_new.index,
                     text='pop')
        fig.update_layout(yaxis={'title':'continent'})
        fig.show()
```



```
In [ ]:
```