In [7]:
```
import pandas as pd
import seaborn as sns
import plotly.express as px

import matplotlib.pyplot as plt
```

In [11]:
```
import plotly.io as pio
pio.renderers.default = "plotly_mimetype+notebook"
```

Matplotlib

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

In [8]:
```
stocks = px.data.stocks()
stocks.head()
```

Out[8]:

	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	0.959968	1.053526	1.015988
2	2018-01-15	1.032008	1.019771	1.053240	0.970243	1.049860	1.020524
3	2018-01-22	1.066783	0.980057	1.140676	1.016858	1.307681	1.066561
4	2018-01-29	1.008773	0.917143	1.163374	1.018357	1.273537	1.040708

Question 1:

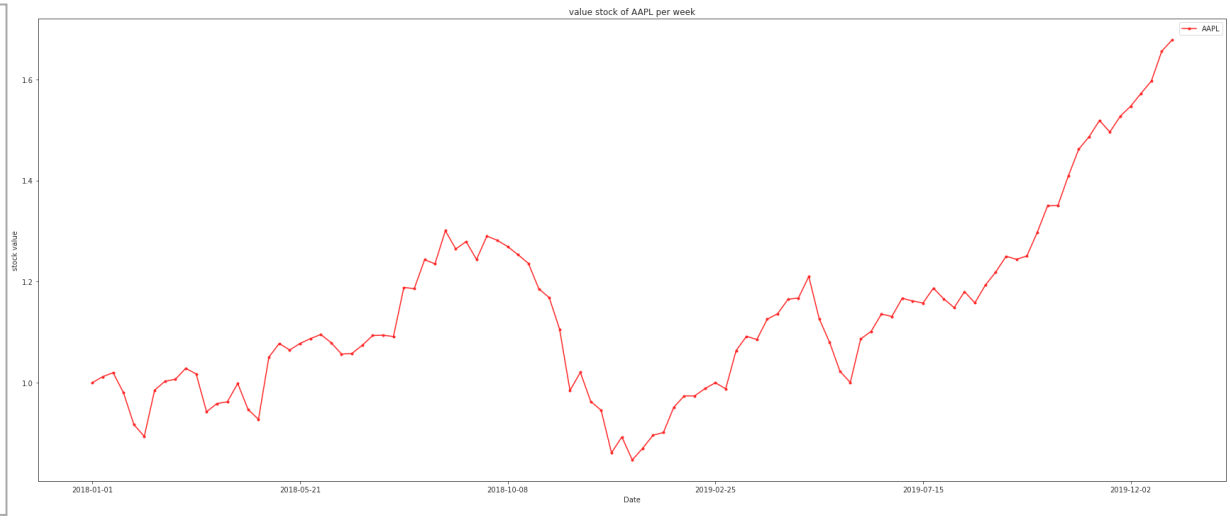
Select a stock and create a suitable plot for it. Make sure the plot is readable with relevant information, such as date, values.

In [21]:
```
# YOUR CODE HERE
from matplotlib.pyplot import figure

import matplotlib.pyplot as plt
import pandas as pd

ax = plt.gca()
stocks.plot(kind='line',x='date',y='AAPL', marker = '.', color='r',
ax=ax, figsize=(30, 12))
plt.legend()
plt.title('value stock of AAPL per week')
plt.ylabel('stock value')
```

```
plt.xlabel('Date')
plt.show()
```



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 [24]:

```
# YOUR CODE HERE

from matplotlib.pyplot import figure

import matplotlib.pyplot as plt
import pandas as pd

ax = plt.gca()
stocks.plot(kind='line',x='date',y='AAPL', marker = '.', color='r',
ax=ax, figsize=(30, 12))
stocks.plot(kind='line',x='date',y='GOOG', marker = '.', color='b',
ax=ax, figsize=(30, 12))
stocks.plot(kind='line',x='date',y='AMZN', marker = '.', color='g',
ax=ax, figsize=(30, 12))
stocks.plot(kind='line',x='date',y='FB', marker = '.', color='orange',
ax=ax, figsize=(30, 12))
stocks.plot(kind='line',x='date',y='NFLX', marker = '.', color='purple',
ax=ax, figsize=(30, 12))
stocks.plot(kind='line',x='date',y='MSFT', marker = '.', color='y',
ax=ax, figsize=(30, 12))
```

```
plt.legend()
plt.title('value stock per week')
plt.ylabel('stock value')
plt.xlabel('Date')
plt.show()
```

Seaborn

First, load the tips dataset

In [26]:
```
tips = sns.load_dataset('tips')
tips.head()
```

Out[26]:

	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 [62]:
```
# YOUR CODE HERE

#- Are there differences between male and female when it comes to giving tips?
import plotly.express as px
df = px.data.tips()
fig = px.box(df, x="sex", y="tip", notched=True)
fig.show()
```

Plotly Express

Question 4:

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

The stocks dataset

Hints:

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

In [96]:
```
# YOUR CODE HERE
import plotly.express as px
df = px.data.stocks()
fig = px.line(df, x="date", y=df.columns,
              hover_data={"date": "|%B %d, %Y"},
              title='Value of Stocks')
fig.update_xaxes(
    dtick="M1",
    tickformat="%b\n%Y")
fig.show()
```

The tips dataset

In [58]:
```
# YOUR CODE HERE
import plotly.express as px
df = px.data.tips()
fig = px.box(df, x="sex", y="tip", notched=True)
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 plotly bar
- Add different colors for different continents
- Sort the order of the continent for the visualisation. Use axis layout setting
- Add text to each bar that represents the population

In [12]:
```
#Load data
df = px.data.gapminder()
df.head()
```

Out[12]:

	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 [95]:
```
# YOUR CODE HERE
import plotly.express as px
data = px.data.gapminder().query("year == 2007")
fig = px.histogram(data, x='pop', y='continent', color = 'continent',
text_auto='.2s')
fig.update_layout(yaxis={'categoryorder':'total ascending'})
fig.show()
```

In [ ]:
```

```