In [67]:
```
import pandas as pd
import seaborn as sns
import plotly.express as px
import numpy as np
import matplotlib.pyplot as plt
```

In [47]:
```
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 [48]:
```
stocks = px.data.stocks()
stocks.head()
```

Out[48]:

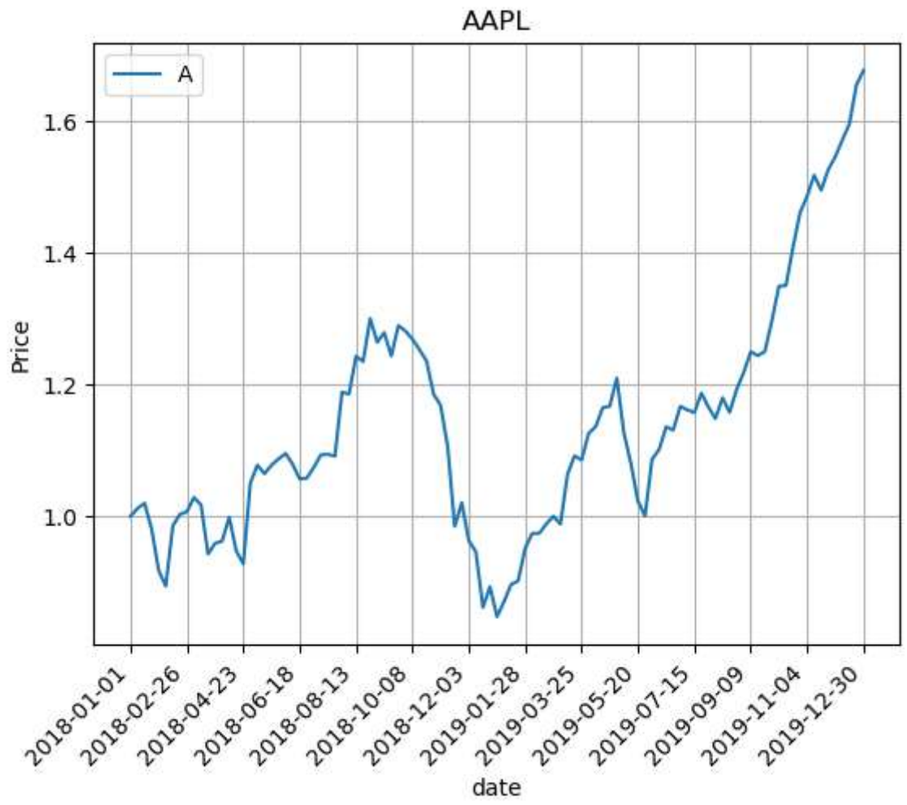
	date	GOOG	AAPL	AMZN	FB	NFLX	MSFT
0	2018-01-01	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
1	2018-01-08	1.018172	1.011943	1.061881	0.959968	1.053526	1.015988
2	2018-01-15	1.032008	1.019771	1.053240	0.970243	1.049860	1.020524
3	2018-01-22	1.066783	0.980057	1.140676	1.016858	1.307681	1.066561
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 [74]:
```
# YOUR CODE HERE

x= stocks['date'] #check with spacing
y = stocks['AAPL'] #Apple stock
plt.plot(x, y)
plt.title('AAPL')
plt.xlabel('date')
plt.ylabel('Price')
plt.xticks(np.arange(0, len(x), step=8), rotation=45, ha='right')
plt.grid()
plt.legend('AAPL')
plt.show()
```

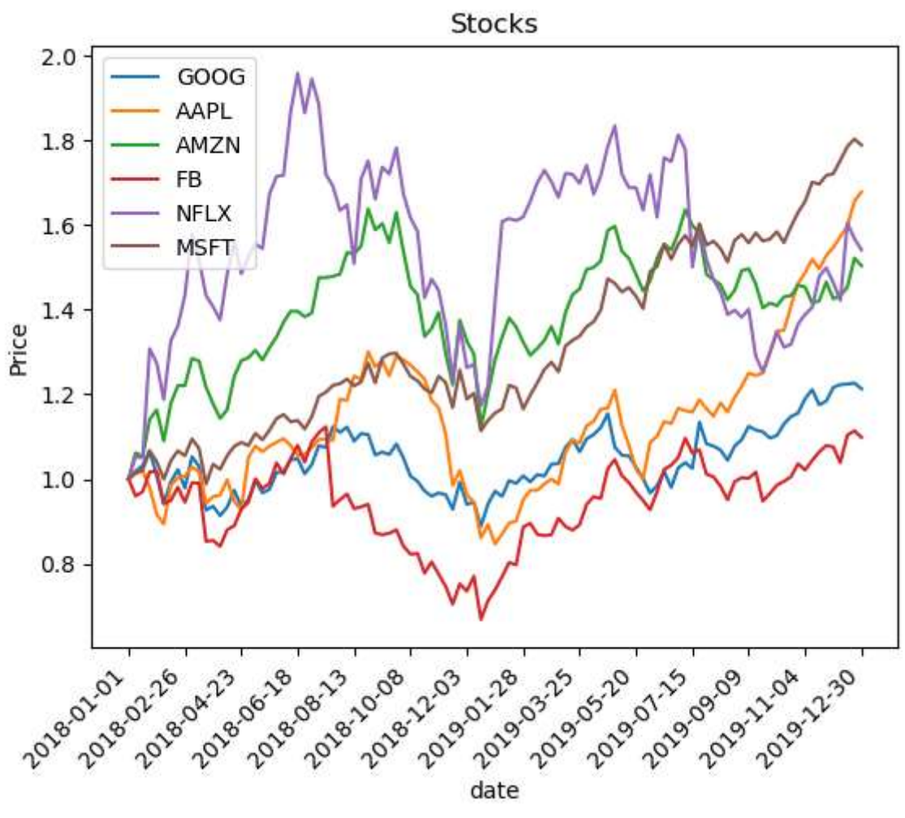


Question 2:

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 [75]:
```
# YOUR CODE HERE

stock_list = ['GOOG', 'AAPL', 'AMZN', 'FB', 'NFLX', 'MSFT']
x= stocks['date']
y = stocks[stock_list]
plt.title('Stocks')
plt.xlabel('date')
plt.ylabel('Price')
plt.plot(x, y)
plt.xticks(np.arange(0, len(x), step=8), rotation=45, ha='right')
plt.legend(stock_list)
plt.show()
```



Seaborn

First, load the tips (https://github.com/mwaskom/seaborn-data/blob/master/tips.csv) dataset

In [76]:
```
tips = sns.load_dataset('tips')
tips.head()
```

Out[76]:

	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.

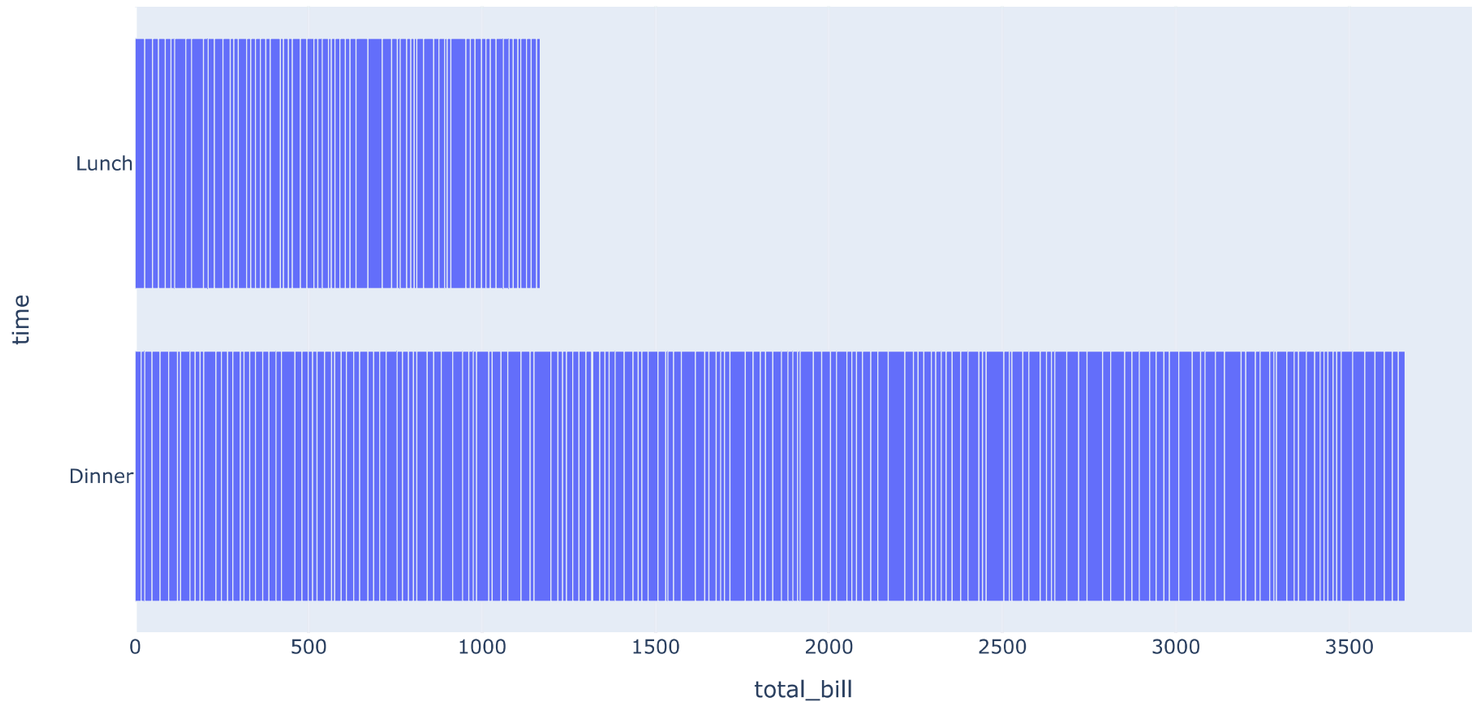
Some possible questions:

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

In [101]:
```
# YOUR CODE HERE
#Is the price of the total bill different depending on the time of the day?

df = px.data.tips()
fig = px.bar(
    df, x="total_bill", y="time",

)
fig.show()
```



Plotly Express

Question 4:

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

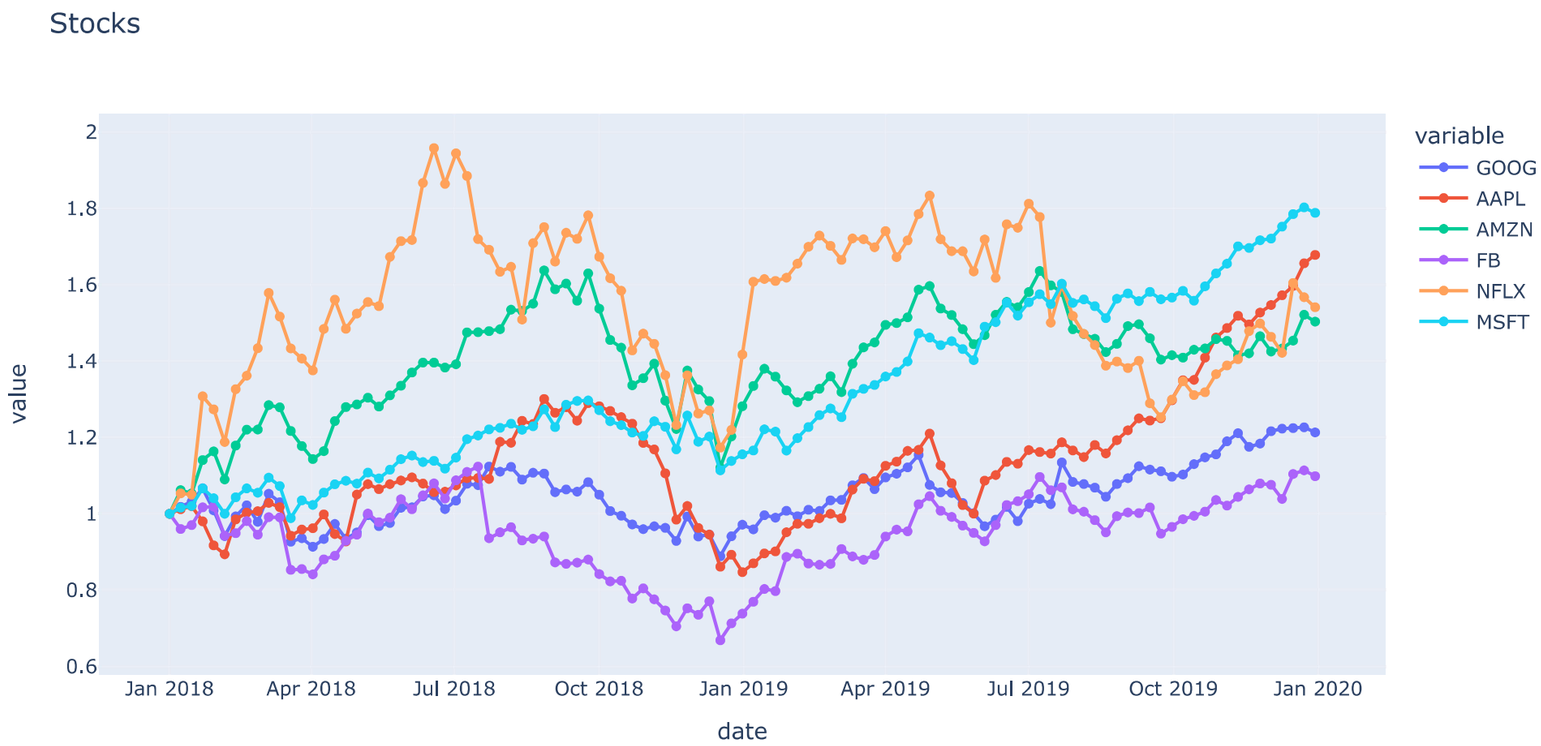
The stocks dataset

Hints:

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

In [139]:
```
# YOUR CODE HERE

stocks = px.data.stocks()
stocks.head()
fig = px.line(stocks, x="date", y= stock_list, title = 'Stocks', markers = True) #I added title
fig.show()
```

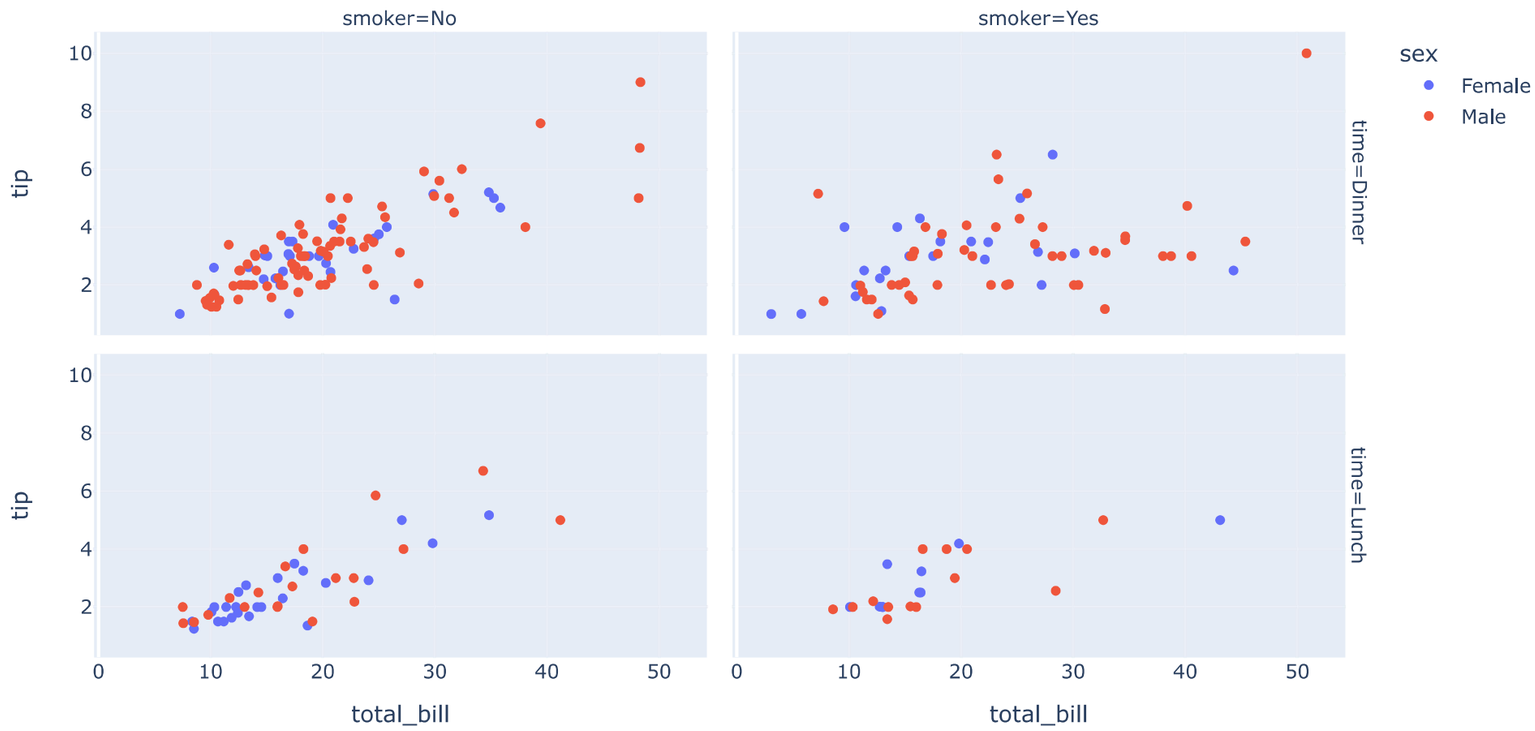


The tips dataset

In [126]:
```
# YOUR CODE HERE
import plotly.express as px
df = px.data.tips()

fig = px.scatter(df, x="total_bill", y="tip", facet_col="smoker", facet_row = 'time', color = 'sex')

fig.show()
```



Question 5:

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

Hints:

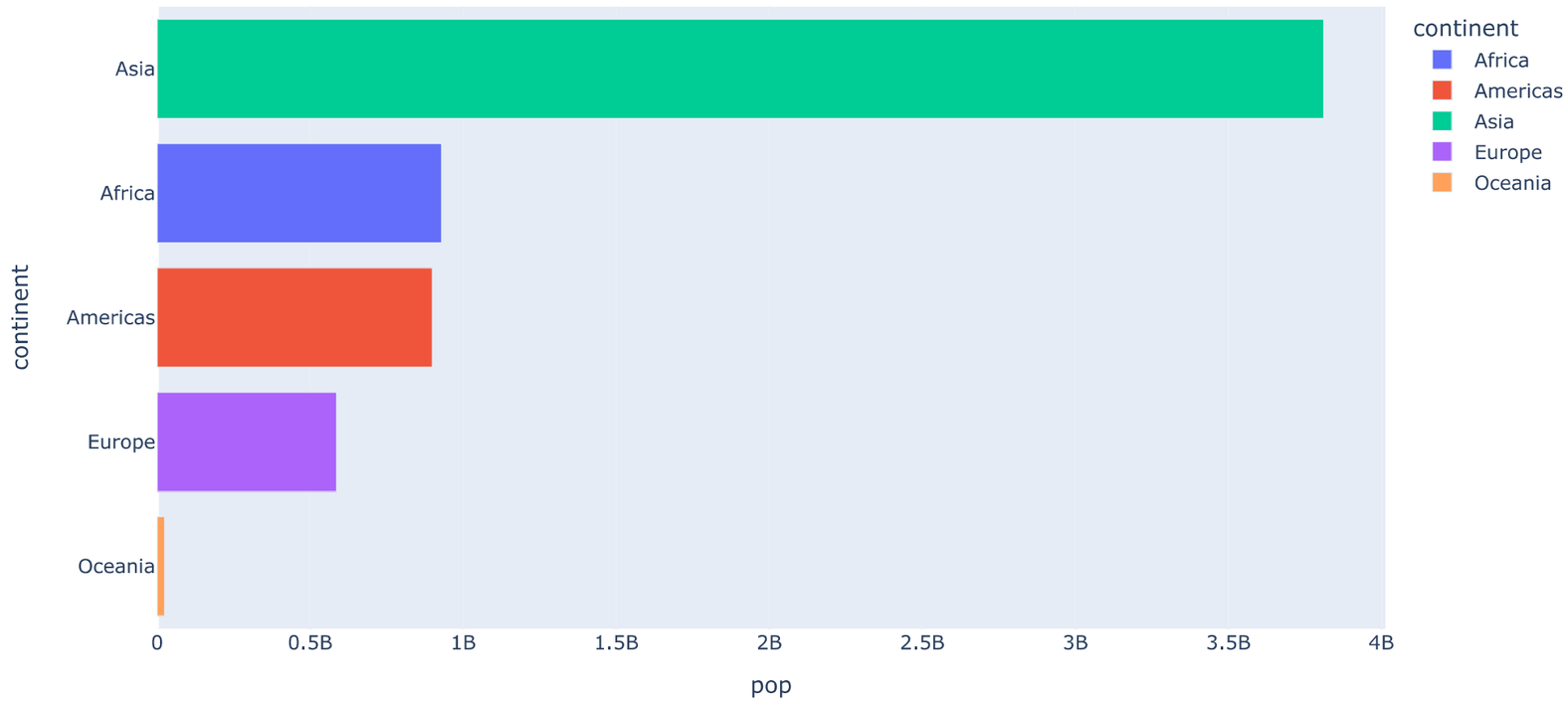
- Extract the 2007 year data from the dataframe. You have to process the data accordingly
- use plotly bar (https://plotly.com/python-api-reference/generated/plotly.express.bar)
- Add different colors for different continents
- Sort the order of the continent for the visualisation. Use axis layout setting (https://plotly.com/python/reference/layout/xaxis/)
- Add text to each bar that represents the population

In [87]:
```
#Load data
df = px.data.gapminder()
df.head()
```

Out[87]:

	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 [100]:
```
# YOUR CODE HERE
df_2007 = df.query('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)
fig.update_layout(yaxis={'categoryorder': 'total ascending'})
fig.show()
```



In [ ]: