In [18]:

```
#2. Utwórz wykres wraz ze średnią ruchomą (dla kolumny Adj Close ) w 2 wariantach:
#Pandas pd.rolling_mean
#altair, przykład tutaj https://altair-viz.github.io/gallery/scatter_with_rolling_mean.html
#Dane do zad.2:
#yahoo finance
#https://finance.yahoo.com/quote/CSV/history/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ2
#wybierz okres 5 lat
#Inne przykłady altair znajdziesz np.tutaj


import pandas as pd

yahoo_finance = pd.read_csv('CSV.csv')
```

In [26]:

```
display (yahoo_finance)
```

	Date	Open	High	Low	Close	Adj Close	Volume
0	2016-04-18	21.709999	22.270000	21.670000	22.270000	20.974157	174700
1	2016-04-19	22.240000	22.469999	22.059999	22.320000	21.021246	65400
2	2016-04-20	22.230000	22.459999	21.980000	22.170000	20.879976	89500
3	2016-04-21	22.110001	22.410000	22.049999	22.209999	20.917646	56700
4	2016-04-22	23.000000	23.750000	22.740000	23.360001	22.000734	357900
...	...	...	...	...	...	...	...
1254	2021-04-12	35.130001	35.340000	34.869999	35.230000	35.230000	43200
1255	2021-04-13	35.119999	35.610001	34.959999	35.279999	35.279999	53900
1256	2021-04-14	35.250000	36.389999	35.130001	36.099998	36.099998	84500
1257	2021-04-15	36.290001	36.290001	35.250000	35.500000	35.500000	33800
1258	2021-04-16	35.770000	35.910000	35.250000	35.830002	35.830002	51600

1259 rows × 7 columns

In [27]:

```
adj_close = yahoo_finance["Adj Close"]
display(adj_close)
```

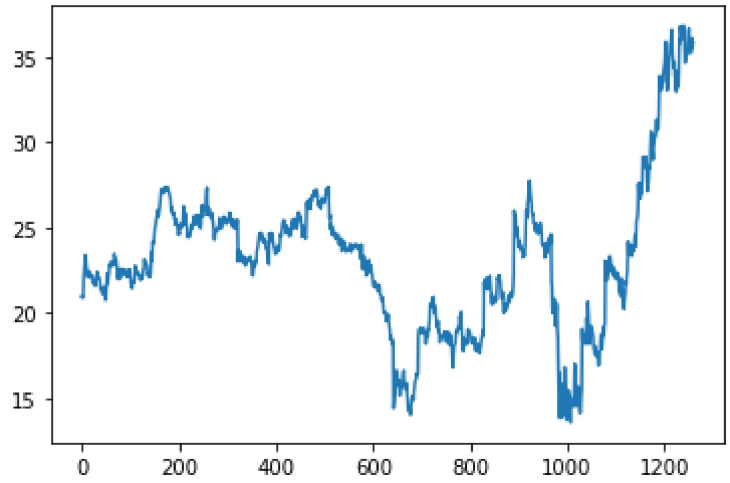
```
0       20.974157
1       21.021246
2       20.879976
3       20.917646
4       22.000734
          ...
1254    35.230000
1255    35.279999
1256    36.099998
1257    35.500000
1258    35.830002
Name: Adj close, Length: 1259, dtype: float64
```

In [21]:

```
adj_close.plot() #basic chart
```

Out[21]:

```
<AxesSubplot:>
```

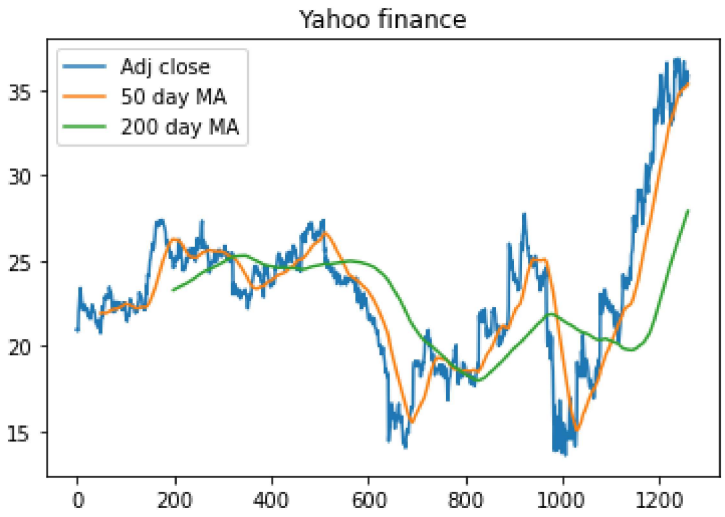


In [25]:

```
adj_close.name = 'Adj close'
adj_close_50ma = adj_close.rolling(50).mean() #50 day moving average
adj_close_50ma.name = '50 day MA'
adj_close_200ma = adj_close.rolling(200).mean() #200 day moving average
adj_close_200ma.name = '200 day MA'
adj_close.plot(title='Yahoo finance', legend=True);adj_close_50ma.plot(legend=True);adj_clo
```

Out[25]:

```
<AxesSubplot:title={'center':'Yahoo finance'}>
```



In [29]:

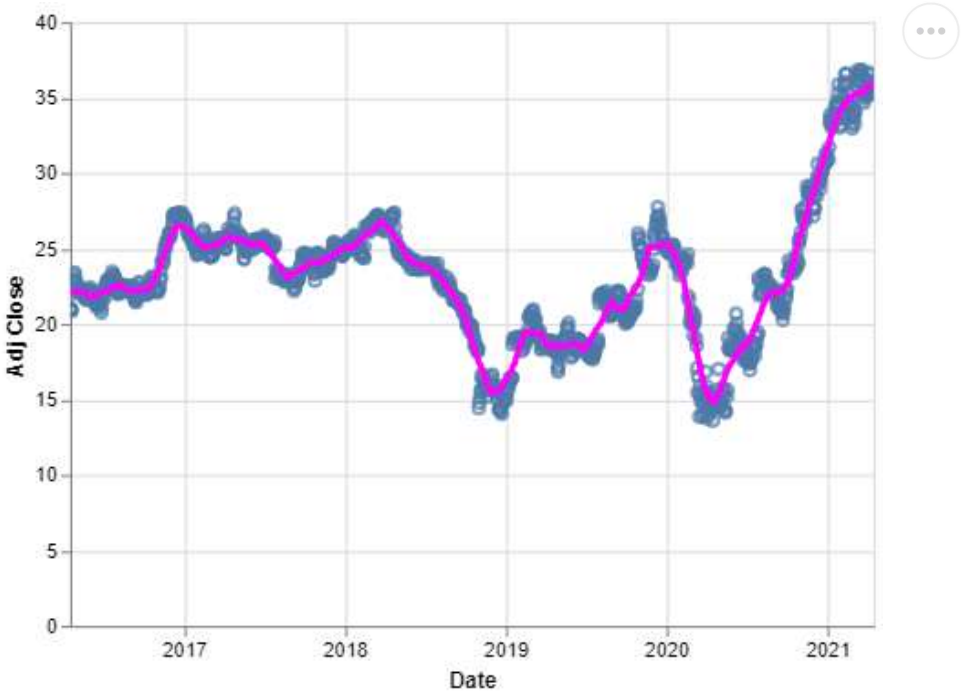
```
import altair as alt

line = alt.Chart(dane).mark_line(
    color='magenta',
    size=3
).transform_window(
    rolling_mean='mean(Adj Close)',
    frame=[-20, 20]
).encode(
    x='Date:T',
    y='rolling_mean:Q'
)


points = alt.Chart(dane).mark_point().encode(
    x='Date:T',
    y=alt.Y('Adj Close:Q',
            axis=alt.Axis(title='Adj Close'))
)

alt.layer(points + line).interactive()
```

Out[29]:



In [ ]:

In [ ]: