Programando em Python

Pandas – DataFrame - Finanças

Aula 11

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Pandas – Retorno Financeiro

$$retorno\_diário = \frac{preço(hoje) - preço(ontem)}{preço(ontem)}$$

Pandas – Retorno Financeiro

$$retorno\_diário = \frac{preço(hoje) - preço(ontem)}{preço(ontem)}$$

- **df.pct_change(1)** # para um dia de intervalo
- **df.pct_change(21)** # para um mês de intervalo
- **df.pct_change(252)** # para um ano de intervalo

Pandas – Retorno Financeiro

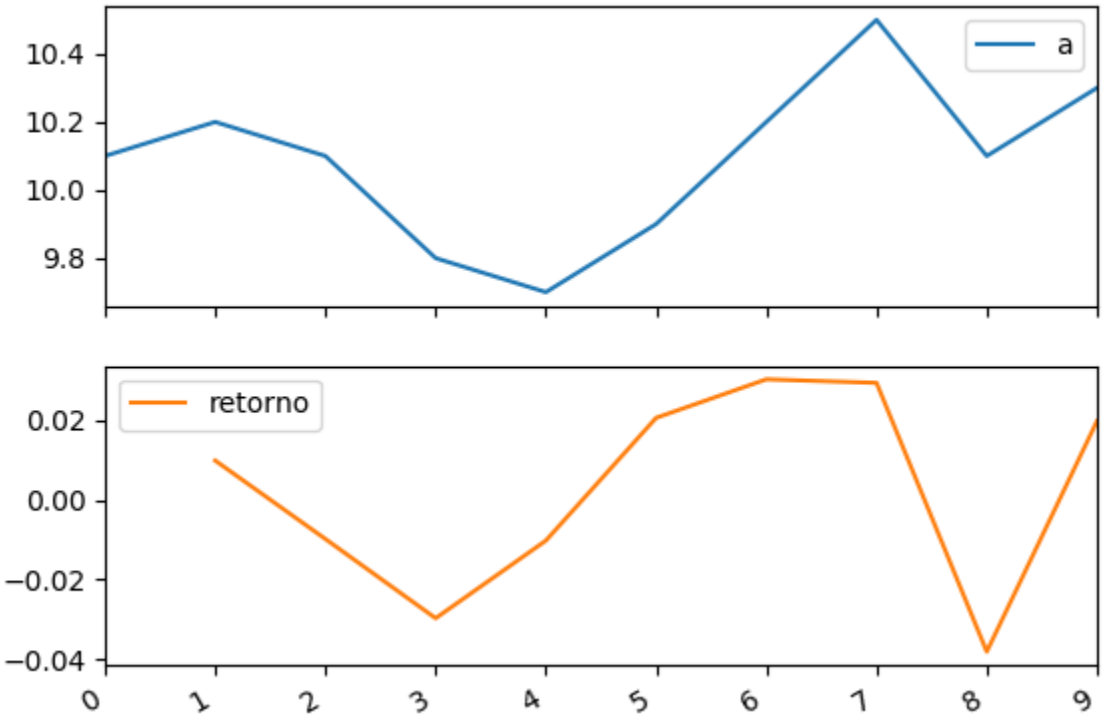
```
1  #biblioteca pandas
2
3  import pandas as pd
4
5  df=pd.DataFrame({'a':[10.1,10.2,10.1,9.8,9.7,9.9,10.2,10.5,10.1,10.3]},
6                  index=[0,1,2,3,4,5,6,7,8,9])
7
8  df['retorno']=df.pct_change(1)
9
10 print('++++++++++++++++++++++++++++++')
11 print(df['retorno'])
```

de 1 em 1 dia

Pandas – Retorno Financeiro

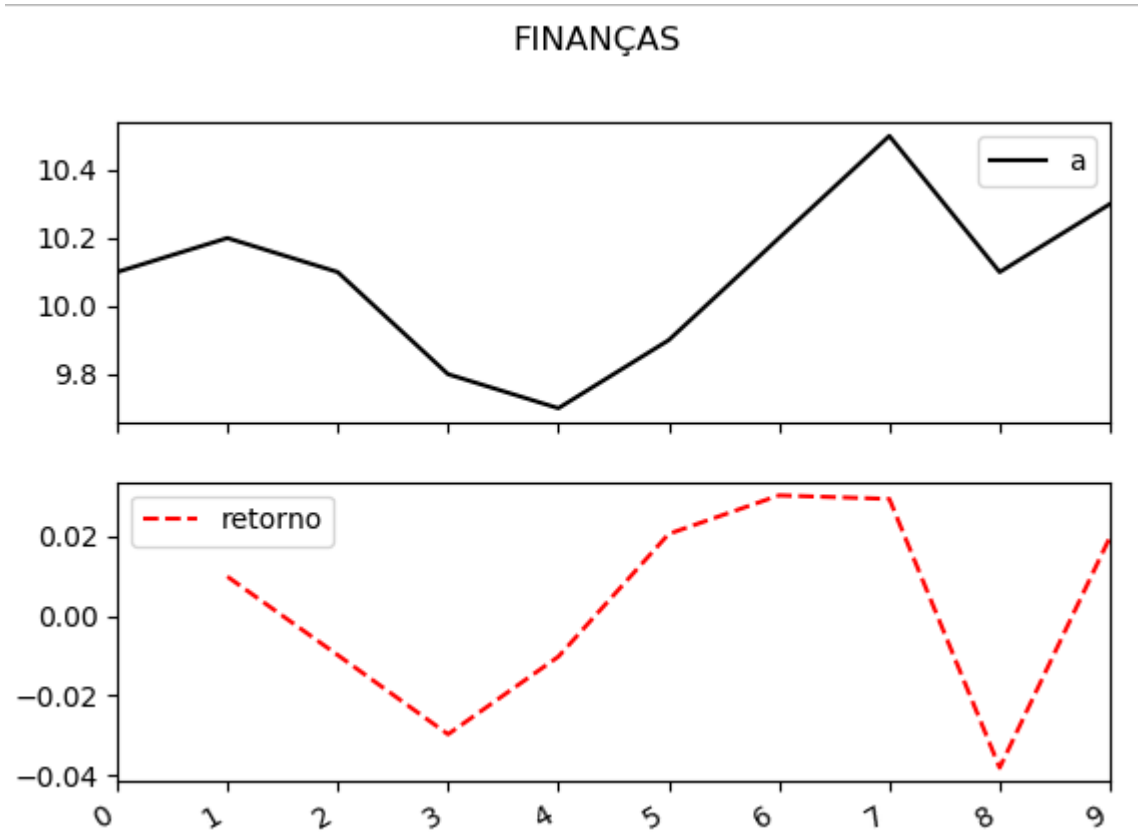
```python
#biblioteca pandas

import pandas as pd

df=pd.DataFrame({'a':[10.1,10.2,10.1,9.8,9.7,9.9,10.2,10.5,10.1,10.3]},,
                 index=[0,1,2,3,4,5,6,7,8,9])

df['retorno']=df.pct_change(1)

print('++++++++++++++++++++++++++++++')
print(df['retorno'])

df.plot.line(subplots=True)
```

Cria subplot automático para as colunas



Pandas – Retorno Financeiro

```
#biblioteca pandas

import pandas as pd

df=pd.DataFrame({'a':[10.1,10.2,10.1,9.8,9.7,9.9,10.2,10.5,10.1,10.3]},
                index=[0,1,2,3,4,5,6,7,8,9])

df['retorno']=df.pct_change(1)

print('++++++++++++++++++++++++++++++')
print(df['retorno'])

df.plot.line(style=['-','--'],color=['k','r'],
             title='FINANÇAS',subplots=True)
```

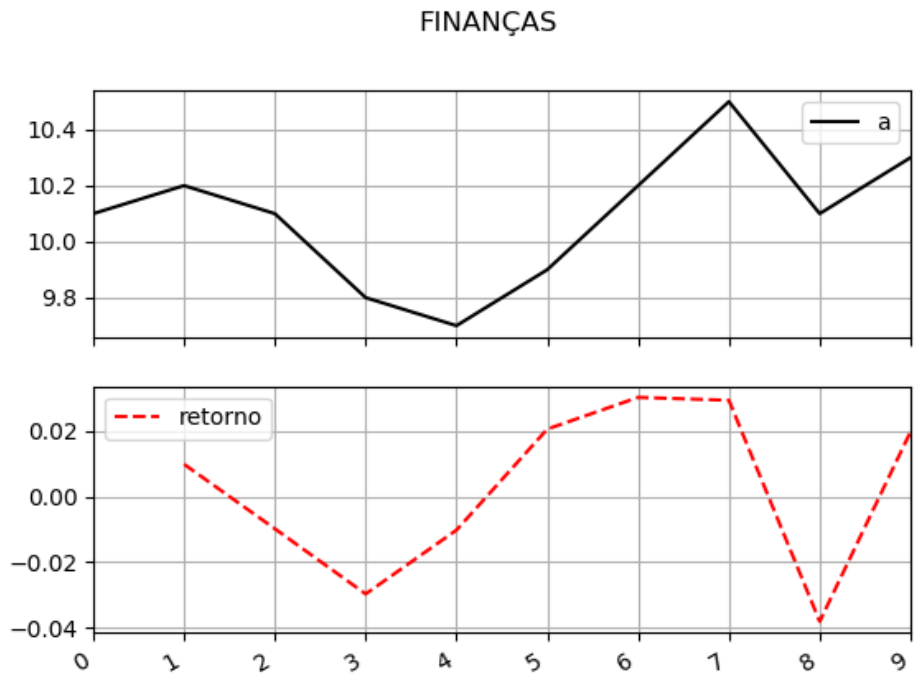


Formatando os subplots

Pandas – Retorno Financeiro

COLOCANDO GRADE.....

```
13 df.plot.line(style=['-','--'],color=['k','r'],
14                 title='FINANÇAS',subplots=True,grid=True)
```



Pandas – Estilos e fundo no gráfico

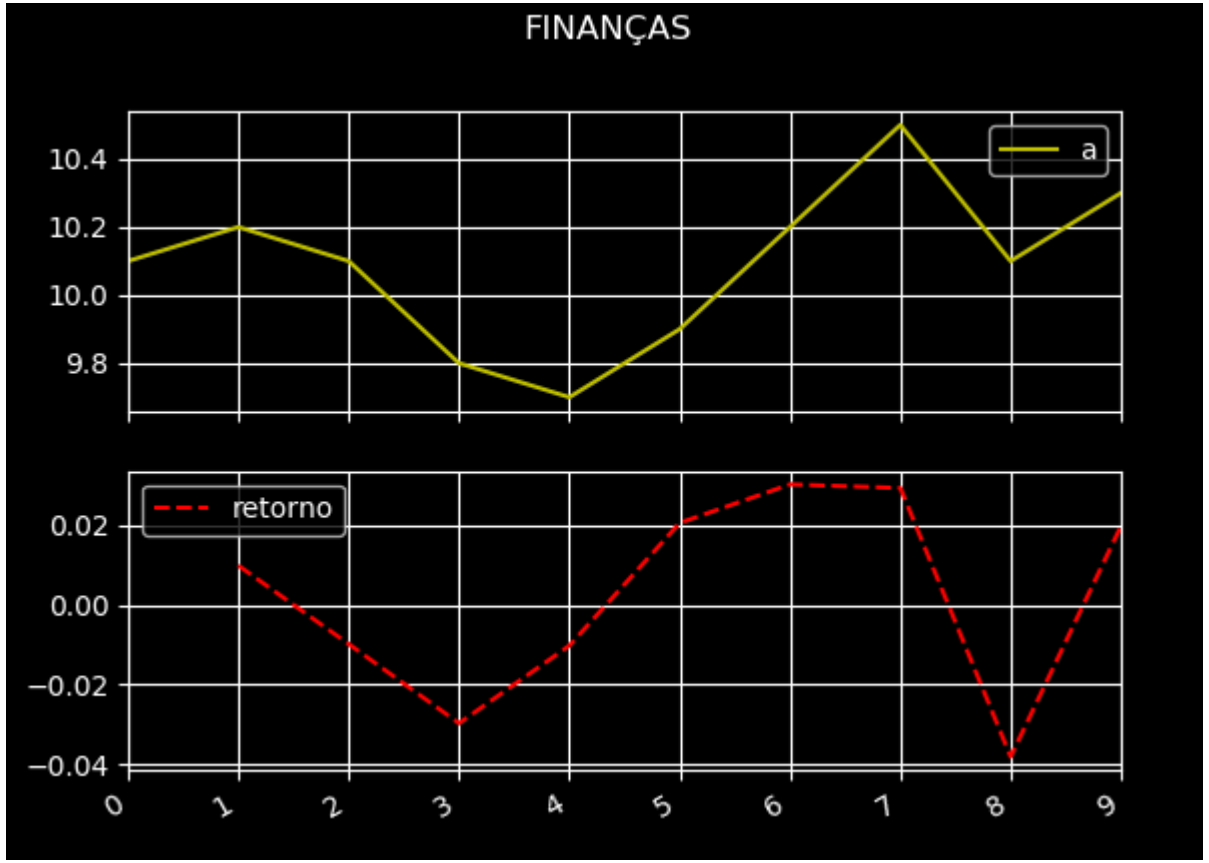
['Solarize_Light2', '_classic_test_patch', 'bmh', 'classic', 'dark_background', 'fast', 'fivethirtyeight', 'ggplot','grayscale','seaborn','seaborn-bright','seaborn-colorblind', 'seaborn-dark', 'seaborn-dark-palette', 'seaborn-darkgrid', 'seaborn-deep', 'seaborn-muted', 'seaborn-notebook', 'seaborn-paper', 'seaborn-pastel', 'seaborn-poster','seaborn-talk','seaborn-ticks','seaborn-white','seaborn-whitegrid','tableau-colorblind10']

Pandas – Retorno Financeiro

Alterando o fundo de tela para “dark”

```
#biblioteca pandas

import pandas as pd
import matplotlib.pyplot as fig
df=pd.DataFrame({'a':[10.1,10.2,10.1,9.8,9.7,9.9,10.2,10.5,10.1,10.3]},
                index=[0,1,2,3,4,5,6,7,8,9])

df['retorno']=df.pct_change(1)

print('++++++++++++++++++++++++++++++')
print(df['retorno'])

fig.style.use('dark_background')
df.plot.line(style=['-','--'],color=['y','r'],
             title='FINANÇAS',subplots=True,grid=True)
```

Pandas – Retorno Financeiro



Pandas – Retorno Financeiro

Alterando o fundo de tela para “ggplot”

```
1 #biblioteca pandas
2
3 import pandas as pd
4 import matplotlib.pyplot as fig
5 df=pd.DataFrame({'a':[10.1,10.2,10.1,9.8,9.7,9.9,10.2,10.5,10.1,10.3]},
6                 index=[0,1,2,3,4,5,6,7,8,9])
7
8 df['retorno']=df.pct_change(1)
9
10 print('++++++++++++++++++++++++++++++')
11 print(df['retorno'])
12
13 fig.style.use('ggplot')
14 df.plot.line(style=['-','--'],color=['y','r'],
15              title='FINANÇAS',subplots=True,grid=True)
```

Pandas – Retorno Financeiro

Pandas – Média Móvel

Dia	Preço (R$)	Média (3 dias)
1	2,00	-
2	2,00	-
3	1,00	(2+2+1)/3
4	5,00	(2+1+5)/3
5	3,00	(1+5+3)/3
6	4,00	(5+3+4)/3
7	5,00	(3+4+5)/3

Pandas – Média Móvel

```
df['med_mov']=df['dados'].rolling(window=2).mean()
```

Nova coluna no DataFrame

Pandas – Média Móvel

```
df['med_mov']=df['dados'].rolling(window=2).mean()
```

Coluna original
dos dados

Pandas – Média Móvel

```
df['med_mov']=df['dados'].rolling(window=2).mean()
```

Percorre os dados em
janela de 2 intervalos

Pandas – Média Móvel

```
df['med_mov']=df['dados'].rolling(window=2).mean()
```

Indica que deseja a
média a cada 2 dados

Pandas – Média Móvel (1ª.maneira)

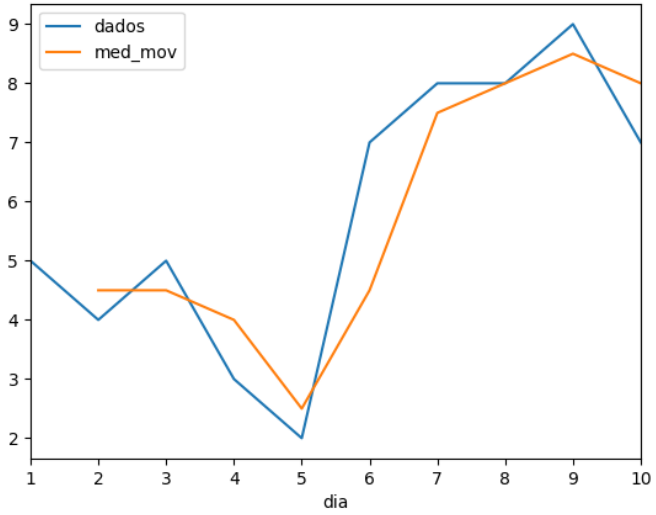
Transformando a coluna dia em index

	A	B
1	**dia**	**dados**
2	1	5
3	2	4
4	3	5
5	4	3
6	5	2
7	6	7
8	7	8
9	8	8
10	9	9
11	10	7

```
1  #biblioteca pandas
2
3  import pandas as pd
4
5  df=pd.read_excel('MD_movel.xlsx','Planilha1')
6
7  df['med_mov']=df['dados'].rolling(window=2).mean()
8
9  df.index=df.dia
10
11 df=df.drop('dia',axis=1)
12
13 df.plot.line()
```

Pandas – Média Móvel (1ª.maneira)

Transformando a coluna dia em index




```
1  #biblioteca pandas
2
3  import pandas as pd
4
5  df=pd.read_excel('MD_movel.xlsx','Planilha1')
6
7  df['med_mov']=df['dados'].rolling(window=2).mean()
8
9  df.index=df.dia
10
11 df=df.drop('dia',axis=1)
12
13 df.plot.line()
```

Pandas – Média Móvel (2ª.maneira)

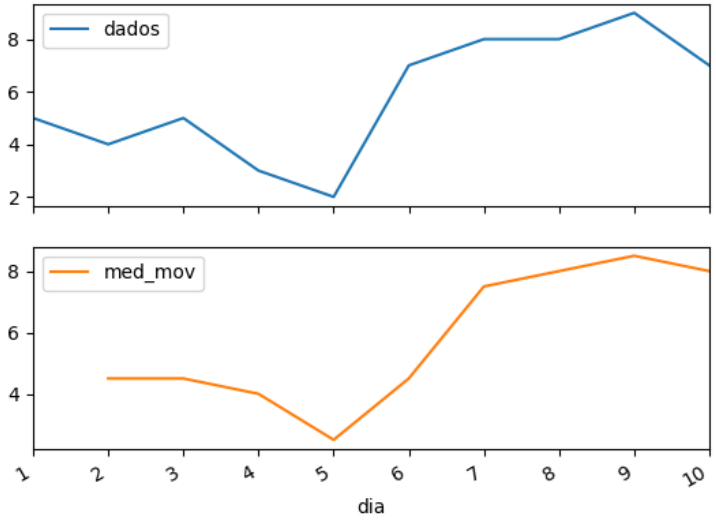
Usando a coluna “dia”

	A	B
1	**dia**	**dados**
2	1	5
3	2	4
4	3	5
5	4	3
6	5	2
7	6	7
8	7	8
9	8	8
10	9	9
11	10	7

```
#biblioteca pandas

import pandas as pd

df=pd.read_excel('MD_movel.xlsx','Planilha1')

df['med_mov']=df['dados'].rolling(window=2).mean()

df.plot.line(x='dia',y=['dados','med_mov'])
```

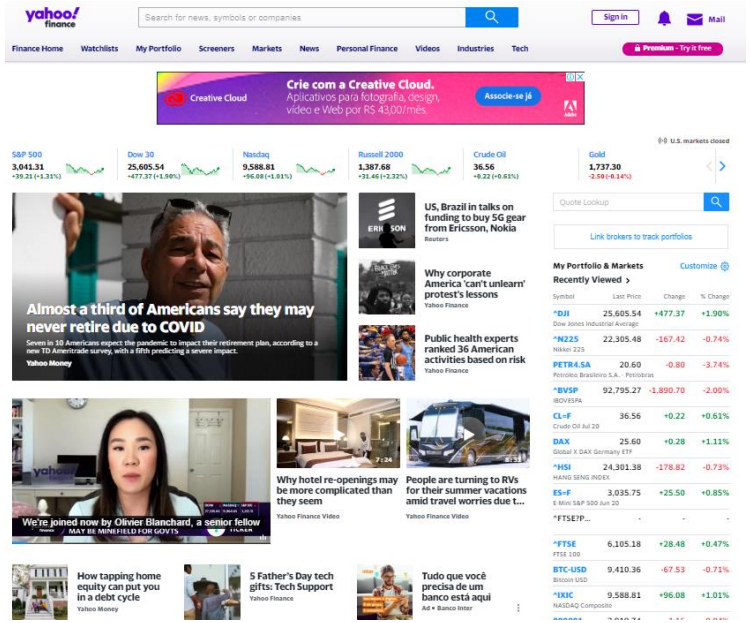
Pandas – Média Móvel (Separando em subplot)

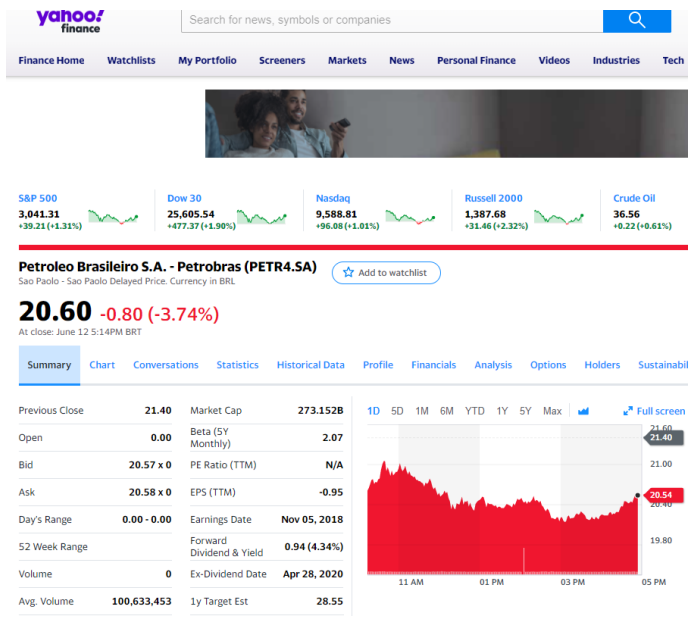
```
#biblioteca pandas

import pandas as pd

df=pd.read_excel('MD_movel.xlsx','Planilha1')

df['med_mov']=df['dados'].rolling(window=2).mean()

df.plot.line(x='dia',y=['dados','med_mov'],subplots=True)
```



Pandas – DataReader – Yahoo! finance

Date	High	Low	Open	Close	Volume	Adj Close
2020-06-05	23.030001	22.059999	22.290001	22.100000	114137700.0	22.100000
2020-06-08	22.590000	22.010000	22.549999	22.530001	82444400.0	22.530001
2020-06-09	22.040001	21.639999	22.030001	21.719999	96488300.0	21.719999
2020-06-10	21.900000	21.000000	21.889999	21.400000	102551100.0	21.400000
2020-06-12	0.000000	0.000000	0.000000	20.600000	0.0	20.600000





Pandas – DataReader – Yahoo! finance

Atenção: precisa instalar antes no console a biblioteca DataReader, usando o seguinte comando de linha e em seguida reiniciar o console:

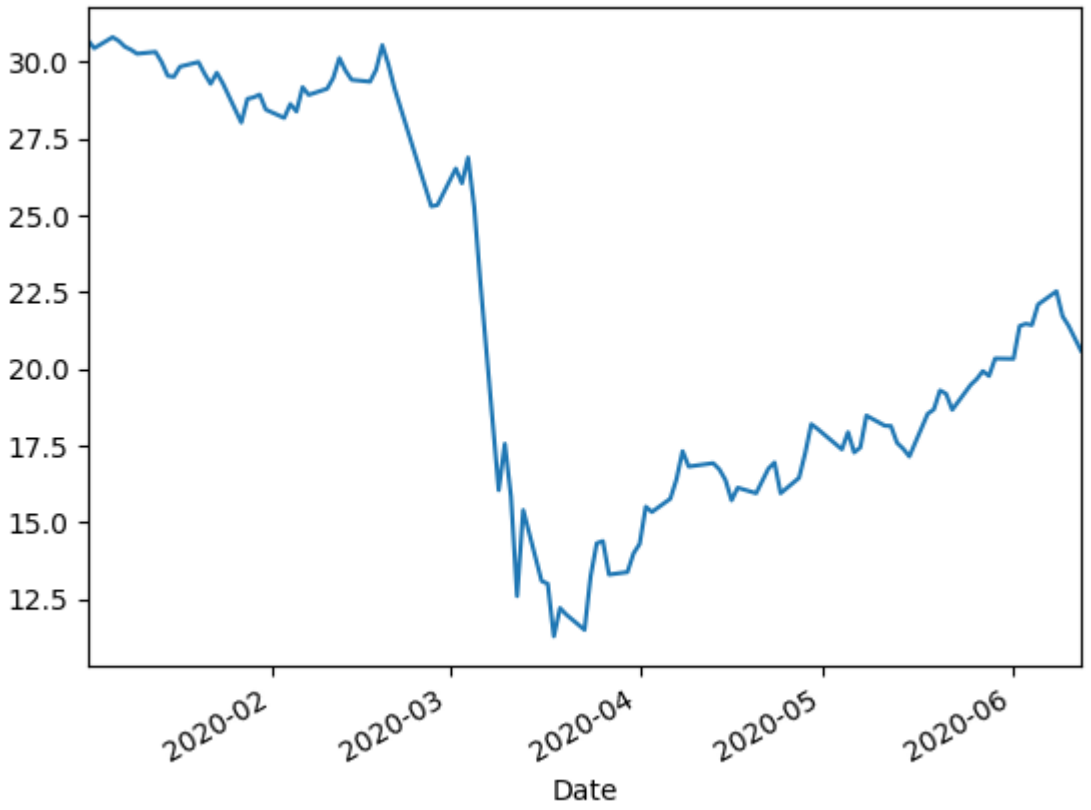
pip install pandas_datareader

Pandas – DataReader – Yahoo! finance

```
1 #biblioteca pandas
2
3 import pandas as pd
4 import pandas_datareader.data as web
5 import datetime as dt
6
7 inicio=dt.datetime(2020,1,1)
8 fim=dt.datetime(2020,6,14)
9 df=web.DataReader('PETR4.SA','yahoo',inicio,fim)
10
11 print(df.tail(5))
12
13 df['Close'].plot.line()
```

Necessária a biblioteca "datetime"

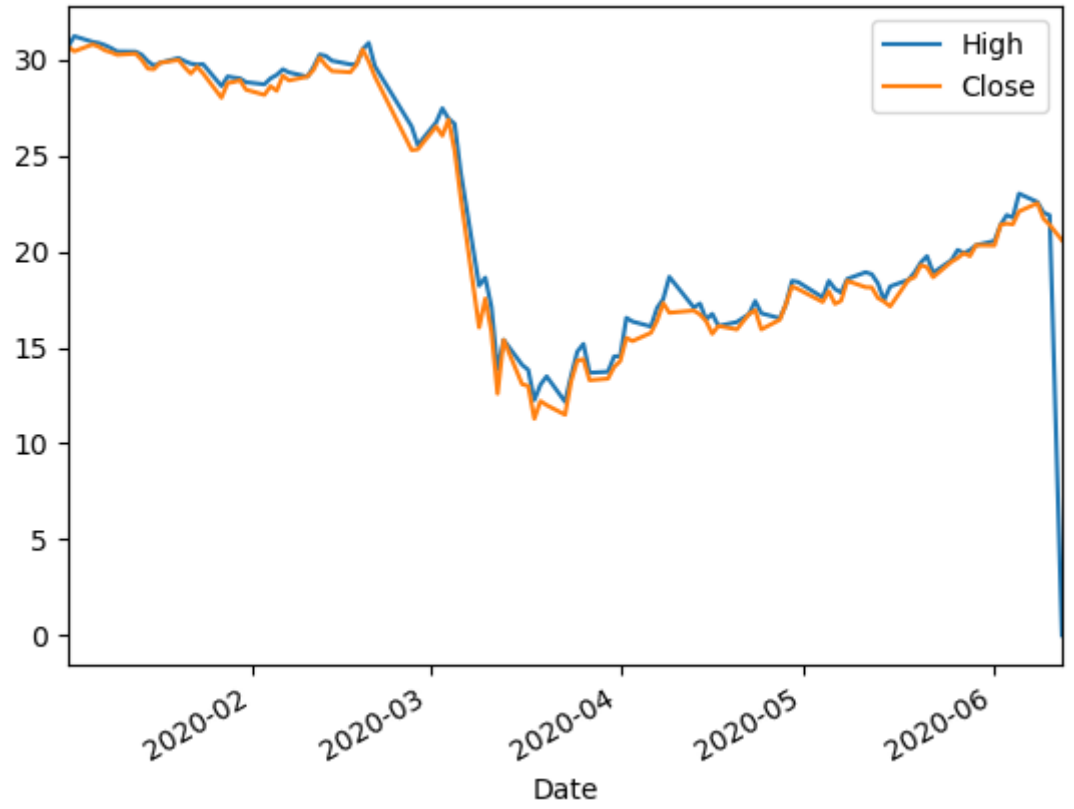
Pandas – DataReader – Yahoo! finance



Pandas – DataReader – Yahoo! finance

```python
#biblioteca pandas

import pandas as pd
import pandas_datareader.data as web
import datetime as dt

inicio=dt.datetime(2020,1,1)
fim=dt.datetime(2020,6,14)
df=web.DataReader('PETR4.SA','yahoo',inicio,fim)

print(df.tail(5))

df.plot.line(y=['High','Close'])

```

Duas ou mais curvas

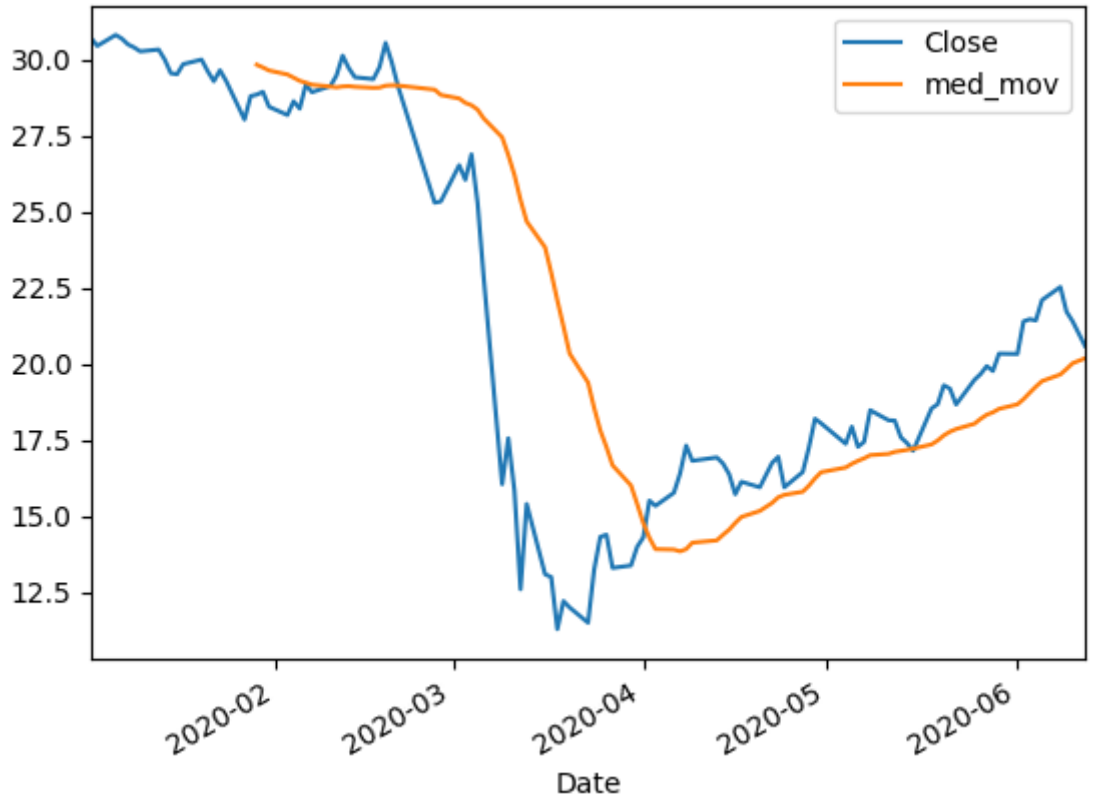


Pandas – Média Móvel – Yahoo! finance

```
1  #biblioteca pandas
2
3  import pandas as pd
4  import pandas_datareader.data as web
5  import datetime as dt
6
7  inicio=dt.datetime(2020,1,1)
8  fim=dt.datetime(2020,6,14)
9  df=web.DataReader('PETR4.SA','yahoo',inicio,fim)
10
11 print(df.tail(5))
12
13 df['med_mov']=df['Close'].rolling(window=20).mean()
14
15 df.plot.line(y=['Close','med_mov'])
```

Média Móvel de 20 dias

Pandas – Média Móvel – Yahoo! finance



Pandas – Retornos Financeiros– Yahoo! finance

```python
#biblioteca pandas

import pandas as pd
import pandas_datareader.data as web
import datetime as dt

inicio=dt.datetime(2020,1,1)
fim=dt.datetime(2020,6,14)
df=web.DataReader('PETR4.SA','yahoo',inicio,fim)

print(df.tail(5))

df['med_mov']=df['Close'].rolling(window=20).mean()
df['retorno']=df['Close'].pct_change(1)

df.plot.line(y=['Close','med_mov','retorno'],
             subplots=True,layout=(3,1))
```

Pandas – Retornos Financeiros– Yahoo! finance

```python
#biblioteca pandas

import pandas as pd
import pandas_datareader.data as web
import datetime as dt

inicio=dt.datetime(2020,1,1)
fim=dt.datetime(2020,6,14)
df=web.DataReader('PETR4.SA','yahoo',inicio,fim)

print(df.tail(5))

df['med_mov']=df['Close'].rolling(window=20).mean()
df['retorno']=df['Close'].pct_change(1)

df.plot.line(y=['Close','med_mov','retorno'],
             subplots=True,layout=(3,1))
```

Retorno diário

Pandas – Retornos Financeiros– Yahoo! finance

yahoo! finance

```
1 #biblioteca pandas
2
3 import pandas as pd
4 import pandas_datareader.data as web
5 import datetime as dt
6
7 inicio=dt.datetime(2020,1,1)
8 fim=dt.datetime(2020,6,14)
9 df=web.DataReader('PETR4.SA','yahoo',inicio,fim)
10
11 print(df.tail(5))
12
13 df['med_mov']=df['Close'].rolling(window=20).mean()
14 df['retorno']=df['Close'].pct_change(1)
15
16 df.plot.line(y=['Close','med_mov','retorno'],
17              subplots=True,layout=(3,1))
```

Retorno diário