

200423

April 25, 2023

```
[2]: import statistics
from binance.spot import Spot as Client
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import mplfinance as mpf

def dati(valuta, limite):
    client = Client(base_url = 'https://api.binance.com')
    dati = client.klines(valuta, '1m', limit = limite)
    dati_df = pd.DataFrame(dati)
    dati_df[0] = (pd.to_datetime(dati_df[0], unit = 'ms'))
    dati_df = dati_df.drop(columns = [6, 7, 8, 9, 10, 11])
    dati_df.columns = ['Date', 'Open', 'High', 'Low', 'Close', 'Volume']
    dati_df = dati_df.set_index('Date')
    dati_df['Open'] = dati_df['Open'].astype(float)
    dati_df['High'] = dati_df['High'].astype(float)
    dati_df['Low'] = dati_df['Low'].astype(float)
    dati_df['Close'] = dati_df['Close'].astype(float)
    dati_df['Volume'] = dati_df['Volume'].astype(float)
    return dati_df

def doppia_media_mobile(dati, window_short, window_long):
    doppia_media_mobile_df = pd.DataFrame(index = dati.index)
    doppia_media_mobile_df['Open'] = dati['Open']
    doppia_media_mobile_df['High'] = dati['High']
    doppia_media_mobile_df['Low'] = dati['Low']
    doppia_media_mobile_df['Close'] = dati['Close']
    doppia_media_mobile_df['Volume'] = dati['Volume']
    doppia_media_mobile_df['Media mobile corta'] = dati['Close'].rolling(window_
    ↳ window_short, min_periods = 1, center = False).mean()
    doppia_media_mobile_df['Media mobile lunga'] = dati['Close'].rolling(window_
    ↳ window_long, min_periods = 1, center = False).mean()
    return doppia_media_mobile_df

def grafico(dati):
    mm_df = dati[['Media mobile corta', 'Media mobile lunga']]
```

```
mm = mpf.make_addplot(mm_df)
mpf.plot(dati, type='candle', volume=True, addplot=mm, figsize = (20, 10))
```

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[3]: dati = dati('BNBUSDT', 60)
doppia_media_mobile_df = doppia_media_mobile(dati, 3, 7)
```

```
[4]: grafico(doppia_media_mobile_df)
```



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[5]: doppia_media_mobile_df
```

```
[5]:
```

Date	Open	High	Low	Close	Volume	Media mobile corta \
2023-04-24 22:08:00	331.4	331.5	331.4	331.5	62.493	331.500000
2023-04-24 22:09:00	331.5	331.5	331.4	331.4	103.655	331.450000
2023-04-24 22:10:00	331.4	331.4	331.3	331.4	134.720	331.433333
2023-04-24 22:11:00	331.4	331.4	331.3	331.3	62.770	331.366667
2023-04-24 22:12:00	331.4	331.6	331.3	331.6	128.517	331.433333
2023-04-24 22:13:00	331.5	331.7	331.5	331.7	181.475	331.533333
2023-04-24 22:14:00	331.7	331.7	331.6	331.7	60.001	331.666667
2023-04-24 22:15:00	331.7	331.7	331.6	331.7	93.220	331.700000
2023-04-24 22:16:00	331.7	331.7	331.6	331.7	112.797	331.700000
2023-04-24 22:17:00	331.7	331.7	331.6	331.7	60.762	331.700000
2023-04-24 22:18:00	331.7	331.7	331.6	331.6	87.503	331.666667
2023-04-24 22:19:00	331.6	331.9	331.6	331.9	88.765	331.733333
2023-04-24 22:20:00	331.9	331.9	331.8	331.9	98.257	331.800000
2023-04-24 22:21:00	331.9	332.0	331.8	332.0	114.537	331.933333
2023-04-24 22:22:00	332.0	332.0	331.9	331.9	90.317	331.933333
2023-04-24 22:23:00	332.0	332.1	331.9	332.1	198.137	332.000000

2023-04-24 22:24:00	332.1	332.2	332.0	332.1	101.705	332.033333
2023-04-24 22:25:00	332.1	332.2	331.9	332.0	231.535	332.066667
2023-04-24 22:26:00	331.9	332.0	331.9	332.0	73.053	332.033333
2023-04-24 22:27:00	332.0	332.1	331.9	332.1	112.516	332.033333
2023-04-24 22:28:00	332.1	332.3	332.0	332.3	126.302	332.133333
2023-04-24 22:29:00	332.3	332.3	332.0	332.1	185.064	332.166667
2023-04-24 22:30:00	332.1	332.1	332.0	332.1	140.340	332.166667
2023-04-24 22:31:00	332.1	332.1	331.9	332.0	128.930	332.066667
2023-04-24 22:32:00	332.1	332.1	332.0	332.1	103.056	332.066667
2023-04-24 22:33:00	332.1	332.1	332.0	332.0	95.052	332.033333
2023-04-24 22:34:00	332.0	332.1	332.0	332.0	68.812	332.033333
2023-04-24 22:35:00	332.1	332.1	332.0	332.1	77.449	332.033333
2023-04-24 22:36:00	332.1	332.1	331.9	332.0	203.841	332.033333
2023-04-24 22:37:00	332.0	332.0	331.8	331.9	168.201	332.000000
2023-04-24 22:38:00	331.9	331.9	331.8	331.8	69.873	331.900000
2023-04-24 22:39:00	331.9	331.9	331.8	331.8	93.569	331.833333
2023-04-24 22:40:00	331.9	331.9	331.8	331.8	76.655	331.800000
2023-04-24 22:41:00	331.8	331.9	331.7	331.8	159.801	331.800000
2023-04-24 22:42:00	331.8	331.8	331.7	331.8	150.232	331.800000
2023-04-24 22:43:00	331.7	331.8	331.6	331.6	151.917	331.733333
2023-04-24 22:44:00	331.7	331.7	331.6	331.7	164.810	331.700000
2023-04-24 22:45:00	331.7	331.8	331.6	331.8	121.351	331.700000
2023-04-24 22:46:00	331.7	331.8	331.7	331.8	134.587	331.766667
2023-04-24 22:47:00	331.8	331.9	331.7	331.9	54.893	331.833333
2023-04-24 22:48:00	331.8	332.1	331.8	332.1	228.526	331.933333
2023-04-24 22:49:00	332.1	332.1	332.0	332.1	53.711	332.033333
2023-04-24 22:50:00	332.0	332.1	331.7	331.7	375.915	331.966667
2023-04-24 22:51:00	331.8	331.8	331.5	331.6	142.835	331.800000
2023-04-24 22:52:00	331.5	331.7	331.5	331.5	389.424	331.600000
2023-04-24 22:53:00	331.5	331.6	331.4	331.5	48.558	331.533333
2023-04-24 22:54:00	331.5	331.5	331.4	331.4	65.348	331.466667
2023-04-24 22:55:00	331.4	331.5	331.4	331.5	60.255	331.466667
2023-04-24 22:56:00	331.4	331.5	331.4	331.4	49.757	331.433333
2023-04-24 22:57:00	331.4	331.5	331.3	331.4	206.010	331.433333
2023-04-24 22:58:00	331.4	331.4	331.3	331.4	86.849	331.400000
2023-04-24 22:59:00	331.4	331.4	331.3	331.4	98.541	331.400000
2023-04-24 23:00:00	331.4	331.6	331.3	331.6	161.685	331.466667
2023-04-24 23:01:00	331.6	331.6	331.5	331.6	131.850	331.533333
2023-04-24 23:02:00	331.6	331.6	331.5	331.6	89.704	331.600000
2023-04-24 23:03:00	331.5	331.7	331.5	331.7	94.911	331.633333
2023-04-24 23:04:00	331.7	331.7	331.6	331.7	86.071	331.666667
2023-04-24 23:05:00	331.7	331.7	331.5	331.5	192.797	331.633333
2023-04-24 23:06:00	331.6	331.6	331.4	331.5	267.848	331.566667
2023-04-24 23:07:00	331.5	331.6	331.4	331.5	223.216	331.500000

Media mobile lunga

Date

2023-04-24 22:08:00	331.500000
2023-04-24 22:09:00	331.450000
2023-04-24 22:10:00	331.433333
2023-04-24 22:11:00	331.400000
2023-04-24 22:12:00	331.440000
2023-04-24 22:13:00	331.483333
2023-04-24 22:14:00	331.514286
2023-04-24 22:15:00	331.542857
2023-04-24 22:16:00	331.585714
2023-04-24 22:17:00	331.628571
2023-04-24 22:18:00	331.671429
2023-04-24 22:19:00	331.714286
2023-04-24 22:20:00	331.742857
2023-04-24 22:21:00	331.785714
2023-04-24 22:22:00	331.814286
2023-04-24 22:23:00	331.871429
2023-04-24 22:24:00	331.928571
2023-04-24 22:25:00	331.985714
2023-04-24 22:26:00	332.000000
2023-04-24 22:27:00	332.028571
2023-04-24 22:28:00	332.071429
2023-04-24 22:29:00	332.100000
2023-04-24 22:30:00	332.100000
2023-04-24 22:31:00	332.085714
2023-04-24 22:32:00	332.100000
2023-04-24 22:33:00	332.100000
2023-04-24 22:34:00	332.085714
2023-04-24 22:35:00	332.057143
2023-04-24 22:36:00	332.042857
2023-04-24 22:37:00	332.014286
2023-04-24 22:38:00	331.985714
2023-04-24 22:39:00	331.942857
2023-04-24 22:40:00	331.914286
2023-04-24 22:41:00	331.885714
2023-04-24 22:42:00	331.842857
2023-04-24 22:43:00	331.785714
2023-04-24 22:44:00	331.757143
2023-04-24 22:45:00	331.757143
2023-04-24 22:46:00	331.757143
2023-04-24 22:47:00	331.771429
2023-04-24 22:48:00	331.814286
2023-04-24 22:49:00	331.857143
2023-04-24 22:50:00	331.871429
2023-04-24 22:51:00	331.857143
2023-04-24 22:52:00	331.814286
2023-04-24 22:53:00	331.771429
2023-04-24 22:54:00	331.700000

2023-04-24 22:55:00	331.614286
2023-04-24 22:56:00	331.514286
2023-04-24 22:57:00	331.471429
2023-04-24 22:58:00	331.442857
2023-04-24 22:59:00	331.428571
2023-04-24 23:00:00	331.442857
2023-04-24 23:01:00	331.471429
2023-04-24 23:02:00	331.485714
2023-04-24 23:03:00	331.528571
2023-04-24 23:04:00	331.571429
2023-04-24 23:05:00	331.585714
2023-04-24 23:06:00	331.600000
2023-04-24 23:07:00	331.585714

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[6]: # Aggiungo una colonna al df per inserire dei marcatori
doppia_media_mobile_df['Cross'] = 0

# Algoritmo per il marcatore
#doppia_media_mobile_df['Cross'] =

for x in doppia_media_mobile_df['Media mobile corta']:
    print(x)

# Plotto
#apd = mpf.
→make_addplot(doppia_media_mobile_df['Cross'],type='scatter',markersize=200,marker='^')
#mpf.plot(doppia_media_mobile_df, type='candle', volume=True, addplot=apd,
→figsize = (20, 10))
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```
331.5
331.45
331.43333333333334
331.36666666666666
331.43333333333333
331.53333333333325
331.66666666666666
331.69999999999993
331.69999999999999
331.69999999999999
331.66666666666666
331.73333333333332
331.79999999999998
331.93333333333331
331.93333333333331
331.99999999999983
332.03333333333313
332.06666666666665
332.03333333333313
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332.03333333333313
332.13333333333316
332.1666666666665
332.16666666666646
332.06666666666655
332.06666666666655
332.03333333333325
332.033333333333
332.03333333333325
332.033333333333
332.0
331.9
331.833333333333
331.8
331.8
331.8
331.7333333333335
331.70000000000005
331.70000000000005
331.7666666666667
331.833333333333
331.9333333333334
332.0333333333336
331.96666666666675
331.80000000000007
331.6
331.5333333333336
331.46666666666664
331.4666666666667
331.4333333333334
331.43333333333345
331.40000000000001
331.400000000000015
331.4666666666668
331.5333333333335
331.60000000000002
331.6333333333335
331.6666666666668
331.6333333333335
331.56666666666683
331.500000000000017

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[34]: doppia_media_mobile_df
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[34]:           Open   High   Low  Close   Volume  Media mobile corta \
Date
2023-04-20 14:57:00  325.8  325.8  325.4  325.4  411.447          325.400000

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2023-04-20 14:58:00	325.4	325.5	325.3	325.4	85.717	325.400000
2023-04-20 14:59:00	325.4	325.5	325.2	325.4	149.647	325.400000
2023-04-20 15:00:00	325.5	325.7	325.4	325.6	213.830	325.466667
2023-04-20 15:01:00	325.5	325.6	325.2	325.2	183.670	325.400000
2023-04-20 15:02:00	325.2	325.4	325.2	325.3	341.880	325.366667
2023-04-20 15:03:00	325.3	325.3	325.2	325.3	88.029	325.266667
2023-04-20 15:04:00	325.3	325.5	325.2	325.4	167.182	325.333333
2023-04-20 15:05:00	325.4	325.4	325.3	325.4	36.268	325.366667
2023-04-20 15:06:00	325.3	325.4	325.2	325.2	64.433	325.333333
2023-04-20 15:07:00	325.2	325.3	325.1	325.2	228.278	325.266667
2023-04-20 15:08:00	325.2	325.4	325.2	325.4	134.395	325.266667
2023-04-20 15:09:00	325.4	325.4	325.3	325.4	39.585	325.333333
2023-04-20 15:10:00	325.4	325.5	325.3	325.4	73.318	325.400000
2023-04-20 15:11:00	325.5	325.5	325.3	325.3	99.464	325.366667
2023-04-20 15:12:00	325.4	325.4	325.2	325.3	149.146	325.333333
2023-04-20 15:13:00	325.3	325.4	325.1	325.1	431.740	325.233333
2023-04-20 15:14:00	325.2	325.3	325.1	325.2	121.829	325.200000
2023-04-20 15:15:00	325.2	325.3	325.0	325.0	317.031	325.100000
2023-04-20 15:16:00	325.1	325.1	324.9	325.0	315.937	325.066667
2023-04-20 15:17:00	325.1	325.1	324.9	324.9	100.505	324.966667
2023-04-20 15:18:00	325.0	325.1	324.9	325.0	127.434	324.966667
2023-04-20 15:19:00	325.1	325.1	324.9	324.9	65.984	324.933333
2023-04-20 15:20:00	324.9	325.0	324.9	325.0	133.624	324.966667
2023-04-20 15:21:00	325.0	325.1	324.8	325.0	204.942	324.966667
2023-04-20 15:22:00	325.1	325.1	325.0	325.0	57.334	325.000000
2023-04-20 15:23:00	325.1	325.2	325.0	325.1	83.853	325.033333
2023-04-20 15:24:00	325.1	325.4	325.1	325.2	198.908	325.100000
2023-04-20 15:25:00	325.3	325.3	325.1	325.2	147.034	325.166667
2023-04-20 15:26:00	325.2	325.2	324.9	324.9	94.810	325.100000
2023-04-20 15:27:00	324.9	325.0	324.9	325.0	130.392	325.033333
2023-04-20 15:28:00	325.0	325.1	324.9	325.0	119.158	324.966667
2023-04-20 15:29:00	325.1	325.1	325.0	325.0	90.988	325.000000
2023-04-20 15:30:00	325.0	325.1	325.0	325.0	63.522	325.000000
2023-04-20 15:31:00	325.1	325.1	324.5	324.7	704.077	324.900000
2023-04-20 15:32:00	324.6	324.7	324.4	324.5	508.572	324.733333
2023-04-20 15:33:00	324.6	324.6	324.2	324.5	574.416	324.566667
2023-04-20 15:34:00	324.6	324.6	324.3	324.4	144.524	324.466667
2023-04-20 15:35:00	324.4	324.4	324.2	324.3	261.612	324.400000
2023-04-20 15:36:00	324.4	324.6	324.3	324.4	222.957	324.366667
2023-04-20 15:37:00	324.4	324.5	324.4	324.4	152.669	324.366667
2023-04-20 15:38:00	324.5	324.6	324.4	324.5	159.270	324.433333
2023-04-20 15:39:00	324.4	324.5	324.1	324.2	367.664	324.366667
2023-04-20 15:40:00	324.2	324.3	324.1	324.2	307.111	324.300000
2023-04-20 15:41:00	324.3	324.4	324.2	324.3	190.873	324.233333
2023-04-20 15:42:00	324.4	324.4	324.0	324.1	725.000	324.200000
2023-04-20 15:43:00	324.0	324.2	323.8	323.8	730.875	324.066667
2023-04-20 15:44:00	323.8	324.1	323.5	324.0	762.362	323.966667

2023-04-20 15:45:00	324.1	324.1	323.8	323.9	171.556	323.900000
2023-04-20 15:46:00	323.8	323.9	323.5	323.9	589.950	323.933333
2023-04-20 15:47:00	324.0	324.2	323.7	324.2	724.304	324.000000
2023-04-20 15:48:00	324.1	324.2	324.0	324.1	142.136	324.066667
2023-04-20 15:49:00	324.1	324.1	323.9	323.9	77.245	324.066667
2023-04-20 15:50:00	324.0	324.0	323.7	323.7	176.460	323.900000
2023-04-20 15:51:00	323.8	324.0	323.7	323.9	214.198	323.833333
2023-04-20 15:52:00	324.0	324.3	324.0	324.2	240.237	323.933333
2023-04-20 15:53:00	324.1	324.2	324.0	324.1	84.755	324.066667
2023-04-20 15:54:00	324.0	324.1	323.8	323.8	170.645	324.033333
2023-04-20 15:55:00	323.9	323.9	323.6	323.7	164.179	323.866667
2023-04-20 15:56:00	323.7	323.7	323.5	323.6	135.429	323.700000

	Media mobile lunga	Cross
Date		
2023-04-20 14:57:00	325.400000	325.400000
2023-04-20 14:58:00	325.400000	325.400000
2023-04-20 14:59:00	325.400000	325.400000
2023-04-20 15:00:00	325.450000	325.466667
2023-04-20 15:01:00	325.400000	325.400000
2023-04-20 15:02:00	325.383333	325.383333
2023-04-20 15:03:00	325.371429	325.371429
2023-04-20 15:04:00	325.371429	325.371429
2023-04-20 15:05:00	325.371429	325.371429
2023-04-20 15:06:00	325.342857	325.342857
2023-04-20 15:07:00	325.285714	325.285714
2023-04-20 15:08:00	325.314286	325.314286
2023-04-20 15:09:00	325.328571	325.333333
2023-04-20 15:10:00	325.342857	325.400000
2023-04-20 15:11:00	325.328571	325.366667
2023-04-20 15:12:00	325.314286	325.333333
2023-04-20 15:13:00	325.300000	325.300000
2023-04-20 15:14:00	325.300000	325.300000
2023-04-20 15:15:00	325.242857	325.242857
2023-04-20 15:16:00	325.185714	325.185714
2023-04-20 15:17:00	325.114286	325.114286
2023-04-20 15:18:00	325.071429	325.071429
2023-04-20 15:19:00	325.014286	325.014286
2023-04-20 15:20:00	325.000000	325.000000
2023-04-20 15:21:00	324.971429	324.971429
2023-04-20 15:22:00	324.971429	325.000000
2023-04-20 15:23:00	324.985714	325.033333
2023-04-20 15:24:00	325.028571	325.100000
2023-04-20 15:25:00	325.057143	325.166667
2023-04-20 15:26:00	325.057143	325.100000
2023-04-20 15:27:00	325.057143	325.057143
2023-04-20 15:28:00	325.057143	325.057143

2023-04-20 15:29:00	325.057143	325.057143
2023-04-20 15:30:00	325.042857	325.042857
2023-04-20 15:31:00	324.971429	324.971429
2023-04-20 15:32:00	324.871429	324.871429
2023-04-20 15:33:00	324.814286	324.814286
2023-04-20 15:34:00	324.728571	324.728571
2023-04-20 15:35:00	324.628571	324.628571
2023-04-20 15:36:00	324.542857	324.542857
2023-04-20 15:37:00	324.457143	324.457143
2023-04-20 15:38:00	324.428571	324.433333
2023-04-20 15:39:00	324.385714	324.385714
2023-04-20 15:40:00	324.342857	324.342857
2023-04-20 15:41:00	324.328571	324.328571
2023-04-20 15:42:00	324.300000	324.300000
2023-04-20 15:43:00	324.214286	324.214286
2023-04-20 15:44:00	324.157143	324.157143
2023-04-20 15:45:00	324.071429	324.071429
2023-04-20 15:46:00	324.028571	324.028571
2023-04-20 15:47:00	324.028571	324.028571
2023-04-20 15:48:00	324.000000	324.066667
2023-04-20 15:49:00	323.971429	324.066667
2023-04-20 15:50:00	323.957143	323.957143
2023-04-20 15:51:00	323.942857	323.942857
2023-04-20 15:52:00	323.985714	323.985714
2023-04-20 15:53:00	324.014286	324.066667
2023-04-20 15:54:00	323.957143	324.033333
2023-04-20 15:55:00	323.900000	323.900000
2023-04-20 15:56:00	323.857143	323.857143

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