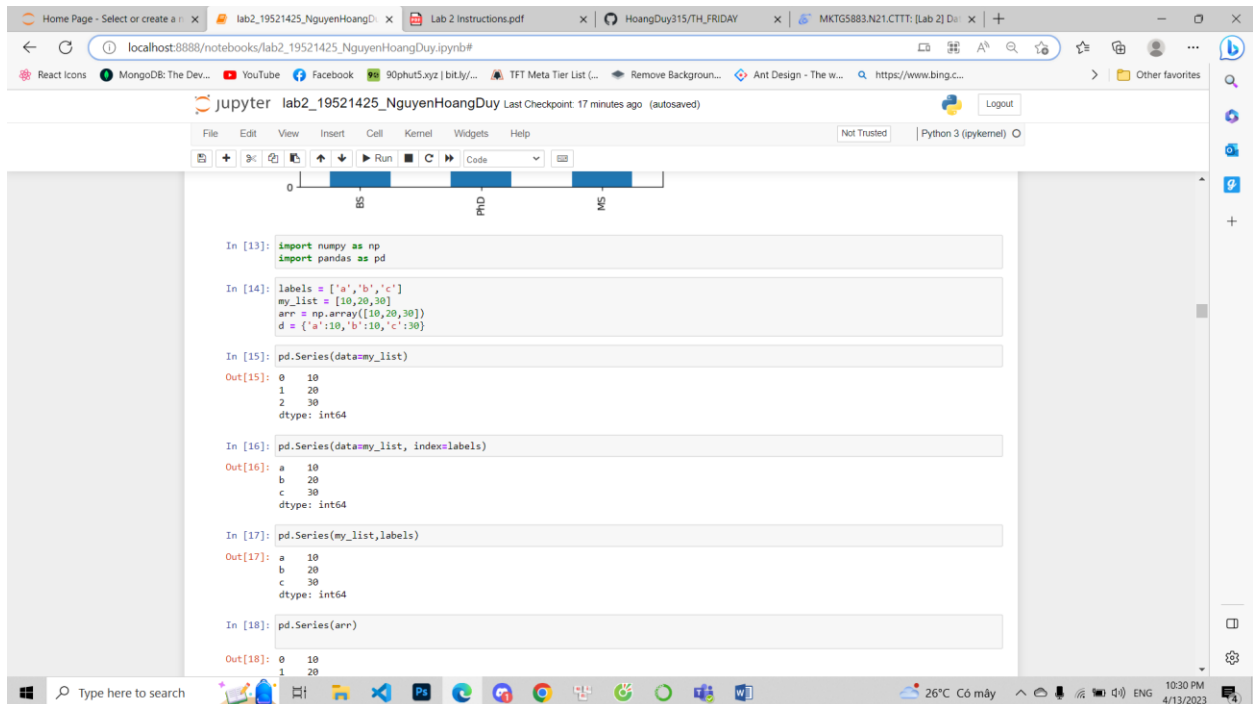


# LAB2

NAME: NGUYEN HOANG DUY

ID:19521425

LINK GITHUB: [HoangDuy315/TH\\_FRIDAY \(github.com\)](https://github.com/HoangDuy315/TH_FRIDAY)



The screenshot displays a Jupyter Notebook environment with the following content:

```
In [13]: import numpy as np
import pandas as pd

In [14]: labels = ['a','b','c']
my_list = [10,20,30]
arr = np.array([10,20,30])
d = {'a':10,'b':10,'c':30}

In [15]: pd.Series(data=my_list)
Out[15]: 0    10
         1    20
         2    30
         dtype: int64

In [16]: pd.Series(data=my_list, index=labels)
Out[16]: a    10
         b    20
         c    30
         dtype: int64

In [17]: pd.Series(my_list, labels)
Out[17]: a    10
         b    20
         c    30
         dtype: int64

In [18]: pd.Series(arr)
Out[18]: 0    10
         1    20
```

The interface includes a top navigation bar with tabs for 'Home Page', 'lab2\_19521425\_NguyenHoangDuy', 'Lab 2 Instructions.pdf', 'HoangDuy315/TH\_FRIDAY', and 'MKTG5883.N21.CTTT: [Lab 2]'. The browser address bar shows 'localhost:8888/notebooks/lab2\_19521425\_NguyenHoangDuy.ipynb#'. The Jupyter Notebook toolbar shows 'File', 'Edit', 'View', 'Insert', 'Cell', 'Kernel', 'Widgets', and 'Help' menus. The status bar at the bottom indicates '26°C Có mây' and '10:30 PM 4/13/2023'.

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```
USSR    3
Japan   4
dtype: int64

In [25]: ser2 = pd.Series([1,2,3,4],index=['USA','Germany','Italy','Japan'])
ser2
Out[25]: USA        1
         Germany    2
         Italy      3
         Japan      4
         dtype: int64

In [26]: ser1 + ser2
Out[26]: Germany    4.0
         Italy      NaN
         Japan      8.0
         USA        2.0
         USSR      NaN
         dtype: float64

In [27]: import pandas as pd

In [28]: import numpy as np
         from numpy.random import randn
         np.random.seed(101)

In [29]: df = pd.DataFrame(randn(5,4),index='A B C D E'.split(),columns='W X Y Z'.split())
df
Out[29]:
```

	W	X	Y	Z
A	2.706850	0.628133	0.907969	0.503826
B	0.651118	-0.319318	-0.848077	0.605965
C	-2.018168	0.740122	0.528813	-0.589001
D	0.188695	-0.758872	-0.933237	0.955057

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File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (pykernel)

```
In [34]: df['new'] = df['W'] + df['Y']

In [35]: df
Out[35]:
```

	W	X	Y	Z	new
A	2.706850	0.628133	0.907969	0.503826	3.614819
B	0.651118	-0.319318	-0.848077	0.605965	-0.196959
C	-2.018168	0.740122	0.528813	-0.589001	-1.489355
D	0.188695	-0.758872	-0.933237	0.955057	-0.744542
E	0.190794	1.978757	2.605967	0.683509	2.796762

```
In [36]: df.drop('new',axis=1)
Out[36]:
```

	W	X	Y	Z
A	2.706850	0.628133	0.907969	0.503826
B	0.651118	-0.319318	-0.848077	0.605965
C	-2.018168	0.740122	0.528813	-0.589001
D	0.188695	-0.758872	-0.933237	0.955057
E	0.190794	1.978757	2.605967	0.683509

```
In [37]: df
Out[37]:
```

	W	X	Y	Z	new
A	2.706850	0.628133	0.907969	0.503826	3.614819
B	0.651118	-0.319318	-0.848077	0.605965	-0.196959
C	-2.018168	0.740122	0.528813	-0.589001	-1.489355
D	0.188695	-0.758872	-0.933237	0.955057	-0.744542
E	0.190794	1.978757	2.605967	0.683509	2.796762

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File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (pykernel)

```
A B C
0 1.0 5.0 1
1 2.0 NaN 2
2 NaN NaN 3
```

In [71]: df.dropna()

Out[71]:

```
A B C
0 1.0 5.0 1
```

In [72]: df.dropna(axis=1)

Out[72]:

```
C
0 1
1 2
2 3
```

In [73]: df.dropna(thresh=2)

Out[73]:

```
A B C
0 1.0 5.0 1
1 2.0 NaN 2
```

In [74]: df.fillna(value='FILL VALUE')

Out[74]:

```
A B C
0 1.0 5.0 1
1 2.0 NaN 2
```

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```
0 GOOG Sam 200
1 GOOG Charlie 120
2 MSFT Amy 340
3 MSFT Vanessa 124
4 FB Carl 243
5 FB Sarah 350
```

In [79]: df.groupby("Company")

Out[79]: <pandas.core.groupby.generic.DataFrameGroupBy object at 0x000001E2B4212A90>

In [80]: by\_comp=df.groupby("Company")

In [81]: by\_comp.mean()

Out[81]:

```
Sales
Company
FB 296.5
GOOG 160.0
MSFT 232.0
```

In [82]: by\_comp.std()

Out[82]:

```
Sales
Company
FB 75.690426
GOOG 56.568542
MSFT 45.730906
```

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File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (pykernel)

```
25% 140.000000
50% 160.000000
75% 180.000000
max 200.000000
Name: GOOG, dtype: float64

In [88]: import pandas as pd

In [89]: df1=pd.DataFrame({'A':['A0','A1','A2','A3'],
                        'B':['B0','B1','B2','B3'],
                        'C':['C0','C1','C2','C3'],
                        'D':['D0','D1','D2','D3']},
                        index=[0,1,2,3])

df2=pd.DataFrame({'A':['A4','A5','A6','A7'],
                  'B':['B4','B5','B6','B7'],
                  'C':['C4','C5','C6','C7'],
                  'D':['D4','D5','D6','D7']},
                  index=[4,5,6,7])

df3=pd.DataFrame({'A':['A8','A9','A10','A11'],
                  'B':['B8','B9','B10','B11'],
                  'C':['C8','C9','C10','C11'],
                  'D':['D8','D9','D10','D11']},
                  index=[8,9,10,11])

In [90]: df1
df2
df3

Out[90]:
```

	A	B	C	D
0	A0	B0	C0	D0
1	A1	B1	C1	D1
2	A2	B2	C2	D2
3	A3	B3	C3	D3
4	A4	B4	C4	D4
5	A5	B5	C5	D5
6	A6	B6	C6	D6
7	A7	B7	C7	D7
8	A8	B8	C8	D8
9	A9	B9	C9	D9
10	A10	B10	C10	D10
11	A11	B11	C11	D11

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File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (pykernel)

```
B 0.651118 -0.319318 -0.848077 0.605965 -0.196959 NY
C -2.018168 0.740122 0.028813 -0.089001 -1.489355 WY
D 0.188695 -0.758872 -0.932337 0.950507 -0.744542 OR
E 0.190794 1.978757 2.605967 0.683509 2.796762 CO

In [58]:
outside=['G1','G1','G1','G2','G2']
inside=[1,2,3,1,2,3]
hier_index=list(zip(outside,inside))
hier_index=pd.MultiIndex.from_tuples(hier_index)

In [59]: hier_index

Out[59]: MultiIndex([('G1', 1),
                    ('G1', 2),
                    ('G1', 3),
                    ('G2', 1),
                    ('G2', 2),
                    ('G2', 3)],
                    )

In [60]: df=pd.DataFrame(np.random.randn(6,2),index=hier_index,columns=['A','B'])
df

Out[60]:
```

	A	B
G1 1	0.302665	1.693723
2	-1.706286	-1.159119
3	-0.134641	0.390528
G2 1	0.166905	0.184502
2	0.807706	0.072960
3	0.638787	0.329646

In [61]: df.loc['G1']

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