```
# -*- coding: utf-8 -*-
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#

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

Homework: Dataframe exercise

In this section, a random dataset of game play records awaits you. One record remains [player_id, gamename], which tells us that the player with the id player_id started (at some time) the given game.

```
hry = ["AssassinsCreed", "Borderlands", "Crysis", "Doom", "Witcher"]
data = pd.DataFrame({"Hrac" : np.random.randint(5, size=(1, 20))[0],
                     "Hra" : np.random.choice(hry, size=(1, 20))[0]})

data
```

	Hrac	Hra
0	3	Borderlands
1	1	Crysis
2	0	Crysis
3	1	AssassinsCreed
4	3	Doom
5	2	Witcher
6	1	Crysis
7	1	AssassinsCreed
8	3	AssassinsCreed
9	3	Borderlands
10	3	Crysis
11	4	Witcher
12	1	AssassinsCreed
13	1	Doom
14	0	Witcher

```
15     4            Doom
16     0         Witcher
17     3  AssassinsCreed
18     1            Doom
19     1  AssassinsCreed
```

Your task now is to filter out only players who have played Crysis. Only one line command is accepted.

```
print(data[data['Hra'] == 'Crysis'])
```

```
    Hrac     Hra
1      1  Crysis
2      0  Crysis
6      1  Crysis
10     3  Crysis
```

Now from the original data (Dataframe 'data') count how many players played a single game (for each game the number of players). Again, only one-line command is accepted.

```
print(data['Hra'].value_counts())
```

```
Hra
AssassinsCreed    6
Doom              4
Crysis            4
Witcher           4
Borderlands       2
Name: count, dtype: int64
```

I want to look at individual players, how many times they have played a given game. Create a new table where the rows will be the players, the columns will be the games, and the records will be the number of times the player started the game.

```
print(data.pivot_table(index="Hrac", columns="Hra", aggfunc="size",
fill_value=0))
```

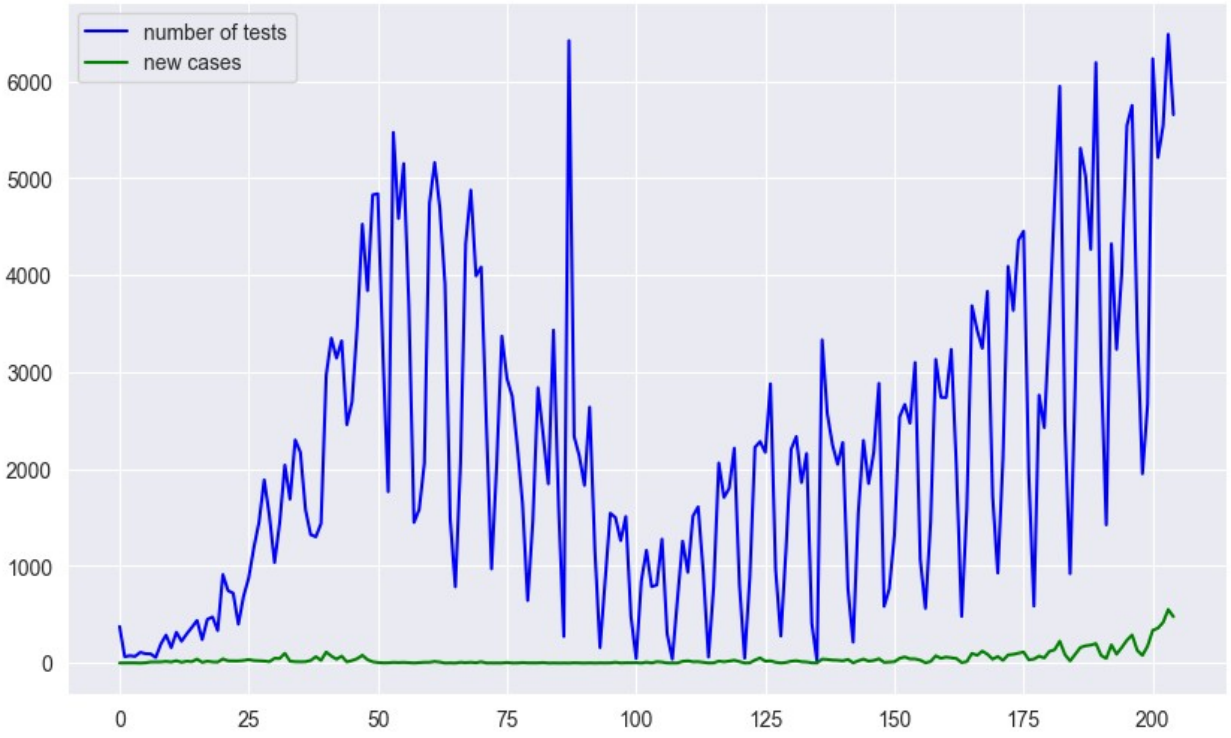
```
Hra   AssassinsCreed  Borderlands  Crysis  Doom  Witcher
Hrac
0                  0            0       1     0        2
1                  4            0       2     2        0
2                  0            0       0     0        1
3                  2            2       1     1        0
4                  0            0       0     1        1
```

Homework: Corona virus!

In this task, you are provided with two series of data. The first is the number of tests carried out and the second is the number of daily increases of positively tested persons in Slovakia from 03/06/2020 to 09/26/2020. Your task now is to display these two series on one graph.

```
tests = pd.Series([378, 66, 76, 69, 111, 97, 95, 58, 197, 289, 159,
318, 225, 301, 368, 440, 242, 451, 476, 335, 913, 747, 720, 401, 688,
877, 1191, 1454, 1889, 1524, 1036, 1448, 2042, 1690, 2301, 2174, 1580,
1324, 1302, 1439, 2967, 3351, 3144, 3323, 2458, 2694, 3468, 4525,
3840, 4828, 4839, 3171, 1767, 5472, 4584, 5150, 3698, 1450, 1584,
2060, 4742, 5161, 4694, 3910, 1488, 786, 2063, 4326, 4876, 3992, 4084,
2476, 971, 2041, 3371, 2933, 2751, 2236, 1649, 645, 1464, 2839, 2352,
1848, 3433, 1606, 274, 6418, 2336, 2135, 1832, 2639, 1180, 160, 851,
1545, 1500, 1262, 1511, 479, 47, 847, 1163, 787, 806, 1278, 301, 41,
661, 1257, 936, 1515, 1611, 931, 62, 784, 2063, 1708, 1801, 2216, 808,
50, 873, 2225, 2284, 2172, 2879, 960, 279, 1163, 2205, 2336, 1862,
2161, 410, 24, 3333, 2571, 2251, 2049, 2275, 767, 216, 1548, 2296,
1851, 2176, 2884, 585, 766, 1320, 2538, 2667, 2473, 3099, 1068, 564,
1454, 3131, 2741, 2738, 3235, 2013, 481, 1583, 3684, 3435, 3245, 3833,
1723, 929, 2103, 4090, 3636, 4360, 4453, 1951, 588, 2763, 2428, 3519,
4772, 5947, 2462, 922, 2891, 5309, 5021, 4266, 6191, 3080, 1425, 4323,
3235, 4027, 5542, 5750, 3443, 1952, 2664, 6231, 5213, 5540, 6483,
5655])
new_cases = pd.Series([1, 2, 2, 2, 0, 3, 11, 11, 12, 17, 11, 24, 8,
19, 14, 41, 7, 19, 12, 10, 43, 23, 22, 22, 27, 37, 26, 24, 21, 14, 49,
47, 101, 19, 14, 13, 14, 27, 66, 28, 114, 72, 40, 72, 12, 26, 45, 81,
35, 13, 6, 2, 3, 7, 5, 7, 4, 1, 5, 8, 8, 16, 10, 0, 2, 0, 8, 4, 8, 3,
13, 1, 1, 0, 1, 6, 1, 1, 5, 2, 2, 2, 5, 0, 1, 0, 1, 0, 3, 1, 0, 2, 0,
2, 1, 2, 8, 1, 3, 3, 4, 0, 9, 1, 14, 10, 1, 1, 1, 18, 23, 13, 14, 7,
1, 2, 20, 13, 20, 29, 15, 1, 2, 31, 53, 19, 23, 8, 1, 6, 19, 24, 14,
11, 3, 1, 41, 37, 31, 29, 23, 38, 2, 23, 41, 20, 27, 45, 7, 10, 14,
49, 63, 43, 43, 30, 3, 16, 75, 49, 62, 54, 47, 5, 15, 100, 80, 123,
91, 40, 68, 28, 84, 90, 102, 114, 34, 41, 72, 53, 121, 137, 226, 88,
22, 91, 161, 178, 186, 201, 79, 48, 188, 92, 161, 235, 290, 131, 79,
175, 338, 360, 419, 552, 478])

plt.figure(figsize=(10,6))
plt.plot(tests, label="number of tests", color="blue")
plt.plot(new_cases, label="new cases", color="green")
plt.legend()
plt.show()
```



More Reading

Pandas = Panel Data

Pandas documentation: https://pandas.pydata.org/pandas-docs/version/0.17.0/10min.html

100-pandas-puzzles

https://github.com/FIIT-IAU/100-pandas-puzzles (forked from https://github.com/ajcr/100-pandas-puzzles)