14 +136

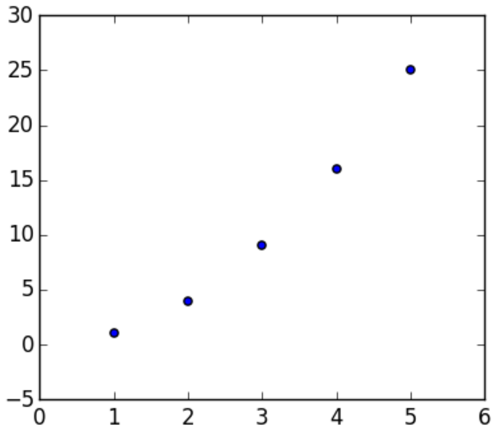
143 9 help

In Matplotlib, what does the argument mean in fig.add_subplot(111)?

Sometimes I come across code such as this:

```
import matplotlib.pyplot as plt
x = [1, 2, 3, 4, 5]
y = [1, 4, 9, 16, 25]
fig = plt.figure()
fig.add_subplot(111)
plt.scatter(x, y)
plt.show()
```

Which produces:



I've been reading the documentation like crazy but I can't find an explanation for the `111`. sometimes I see a `212`.

What does the argument of `fig.add_subplot()` mean?

python matplotlib figure

edited Jun 9 '15 at 19:41
Mack M.
626 8 23

asked Aug 27 '10 at 13:50
pleasedontbelong
9,033 7 27 61

3 Answers

These are subplot grid parameters encoded as a single integer. For example, "111" means "1x1 grid, first subplot" and "234" means "2x3 grid, 4th subplot".

Alternative form for `add_subplot(111)` is `add_subplot(1, 1, 1)`.

answered Aug 27 '10 at 14:05
Constantin
15.6k 5 47 72

1 ohhh that explains it =) thxs – pleasedontbelong Aug 27 '10 at 14:11

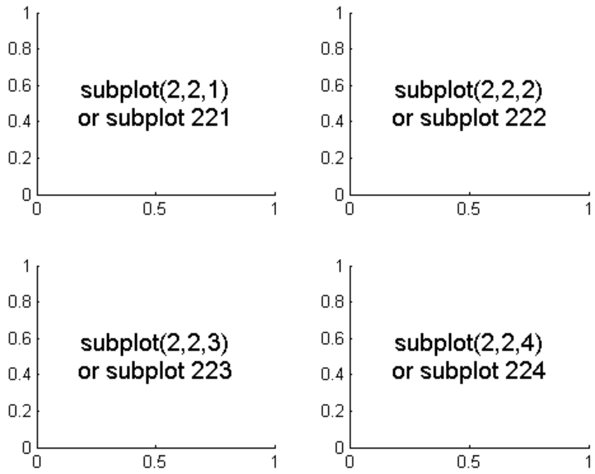
8 Is there any detailed documentation about this? What is the difference between a 1x1 grid and a 2x3 grid in this context? – donatello Nov 30 '10 at 12:34

12 1x1 grid = 1 row, 1 column. 2x3 grid = 2 rows, 3 columns. The third number starts from 1 and increments row-first. See documentation of subplot() for more info. – ianalis Feb 2 '11 at 16:54

7 As others explained (more than two years ago) , this is a legacy from matlab. But for the sake of future readers, you should know that there exists a better alternative, in the form of the `subplots()` method. – jarondl Nov 15 '12 at 14:30

9 Documentation of legacy `subplot()` is here and `subplots()` is here. – crayzeewulf Oct 24 '14 at 4:41

I think this would be best explained by the following picture:



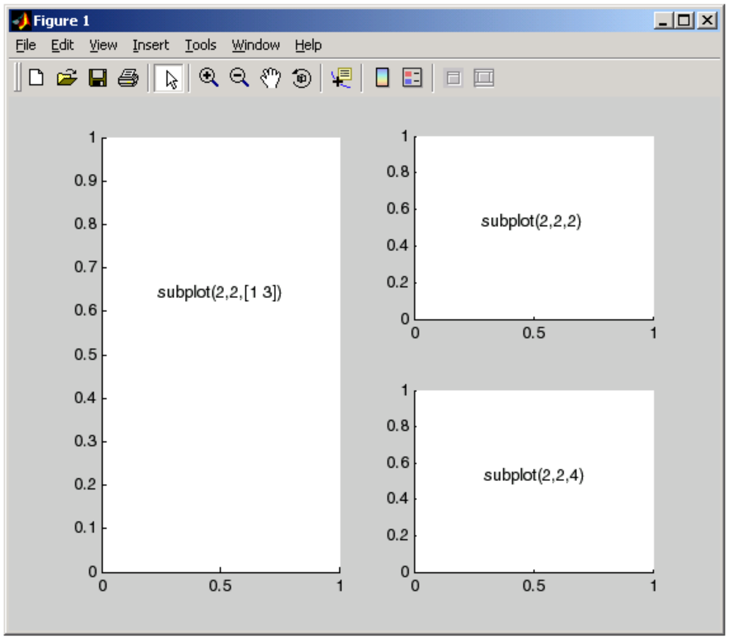
To initialize the above, one would type:

```
import matplotlib.pyplot as plt
fig = plt.figure()
fig.add_subplot(221)   #top left
fig.add_subplot(222)   #top right
fig.add_subplot(223)   #bottom left
fig.add_subplot(224)   #bottom right
plt.show()
```

EDIT: Some additional information

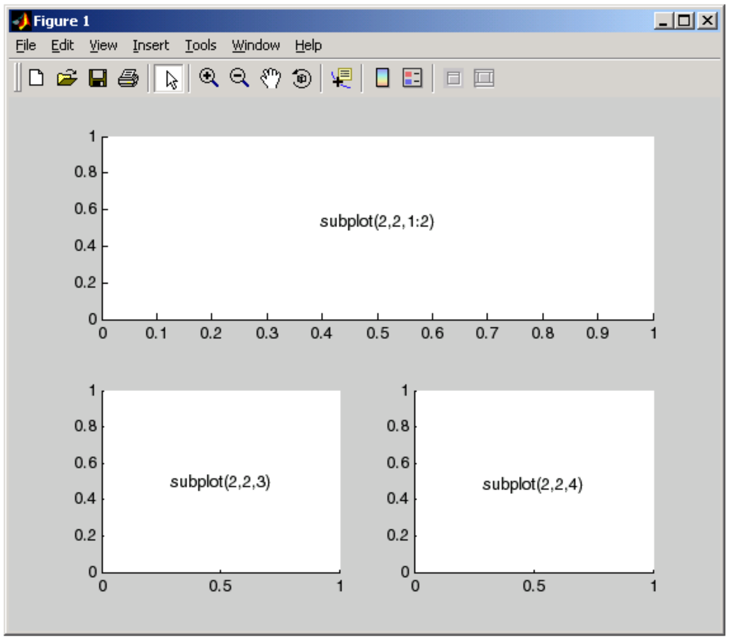
The following combinations produce asymmetrical arrangements of subplots.

```
subplot(2,2,[1 3])
subplot(2,2,2)
subplot(2,2,4)
```



You can also use the colon operator to specify multiple locations if they are in sequence.

```
subplot(2,2,1:2)
subplot(2,2,3)
subplot(2,2,4)
```



Reference here

edited Jun 9 '15 at 22:33

answered Jul 9 '12 at 22:37
SaiyanGirl
4,316 6 20 41

13 I personally find this answer much more understandable then the selected one! – Michael Aquilina Feb 7 '14 at 13:22

@MichaelAquilina Thank you :). I unfortunately answered 2 years too late to have any chance to be picked for the right answer ;) – SaiyanGirl Mar 1 '14 at 10:36

5 I think the version with commas is much more intuitive and readable than the version with 3-digit numbers – endolith Apr 11 '14 at 14:19

3 This is quite helpful. This picture would be a little nicer if it wasn't square (2x2) but otherwise very helpful. – TravisJ Mar 6 '15 at 18:16

1 I guess this answer should be on top – Shrey Mar 9 at 10:16

|

The answer from Constantin is spot on but for more background this behavior is inherited from Matlab.

The Matlab behavior is explained in the Figure Setup - Displaying Multiple Plots per Figure section of the Matlab documentation.

> subplot(m,n,i) breaks the figure window into an m-by-n matrix of small subplots and selects the ithe subplot for the current plot. The plots are numbered along the top row of the figure window, then the second row, and so forth.

edited Jun 9 '15 at 19:49
Mack M.
626 8 23

answered Mar 24 '12 at 9:59
DaveTM
426 3 3

1 This is matplotlib, not matlab. – dom0 May 12 '12 at 18:50

31 Much of matplotlibs behavior is inherited from Matlab. Since the Matlab documentation was better I thought it might help explain how this specific function call behaves. Yes, your are correct, this (question) is regarding matplotlib. The matplotlib subplot documentation is less clear in my opinion. – DaveTM May 24 '12 at 7:55

2 Point taken :-) – dom0 May 24 '12 at 10:37

5 The MATLAB documentation has moved. – dotancohen Dec 8 '14 at 11:12