PROJECT DELIVERABLE 5

Team 4 (Sky Blue)

CSCD01

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User Guide: Feature 2 - Horizontal stem plot #5856

matplotlib.pyplot.stem(**args*, ***kwargs*)

Create a stem plot.

Call signatures:

```
stem(y, linefmt='b-', markerfmt='bo', basefmt='r-')
stem(x, y, linefmt='b-', markerfmt='bo', basefmt='r-')
```

```
#Orientation indicate the newly added feature.
stem(x, y, linefmt='b-', markerfmt='bo', basefmt='r-', orientation = “vertical”)
```

```
stem(x, y, linefmt='b-', markerfmt='bo', basefmt='r-', orientation = “horizontal”)
```

By default, if the parameter orientation was not passed, the function stem plot will use vertical stem with horizontal baseline.

A vertical stem plot is a stem plot that plots vertical lines (using linefmt) at each x location from the baseline to y, and places a marker there using markerfmt. A horizontal line at 0 is plotted using basefmt.

A horizontal stem plot is a stem plot that plots a horizontal lines at each x location from the baseline to y.

If no *x* values are provided, the default is (0, 1, ..., len(y) - 1)

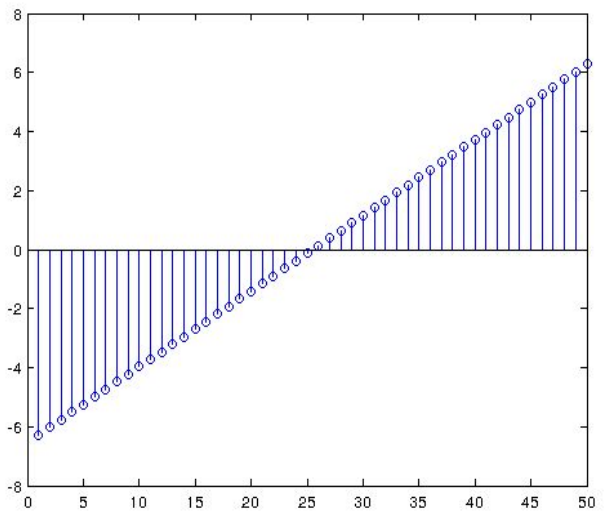
Return value is a tuple (*markerline*, *stemlines*, *baseline*).

See also

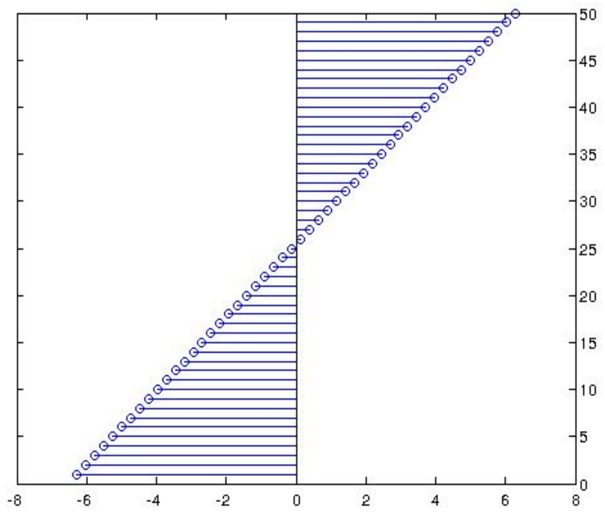
http://matplotlib.org/api/pyplot_api.html#matplotlib.pyplot.stem for more detail on vertical stem with horizontal baseline.

Example:

1. Vertical Stem with Horizontal Baseline.



2. Horizontal stem with Vertical Baseline



Notes

The rest of the functionality are the same when plot using a vertical stem with horizontal baseline.

The only difference is horizontal stem and vertical stem. The rest functionality are the same.

User Acceptance Tests

Regression tests will be run in order to ensure that the introduction of the feature does not break pre-existing functionality.

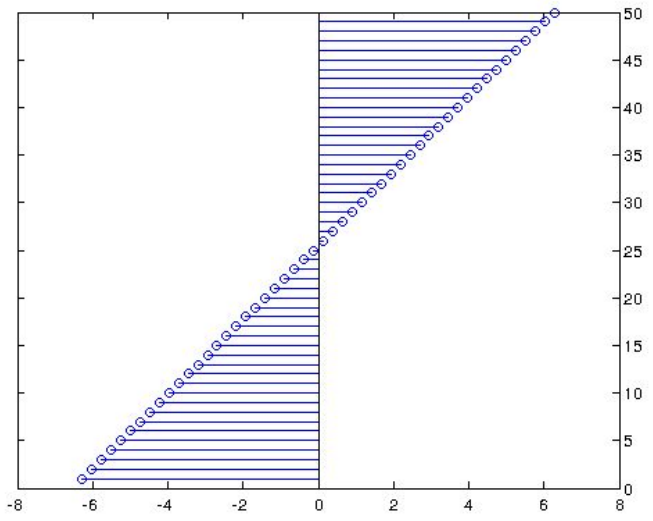
```
> python tests.py
```

Additionally, there will be tests to see if the below features functions as expected (by running pyplot.stem() to create stem plots):

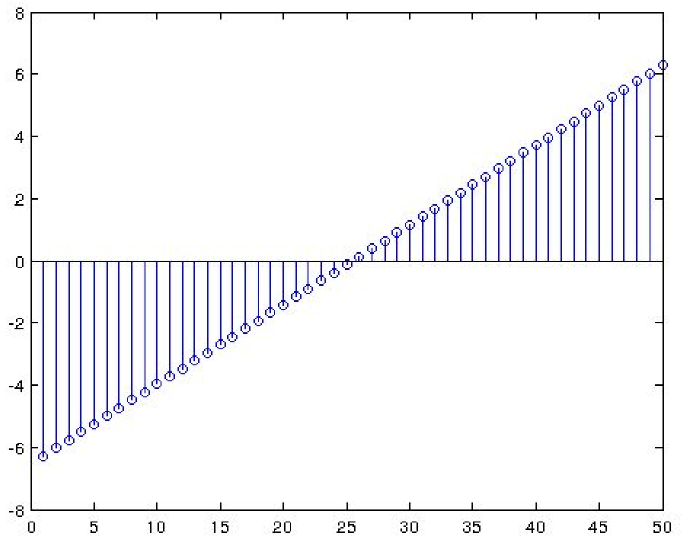
- New feature: horizontal stem with vertical baseline
- Existing feature: vertical stem with horizontal baseline

Expected outputs:

Horizontal stem with vertical baseline(New feature)



Vertical Stem with Horizontal baseline (Existing feature)



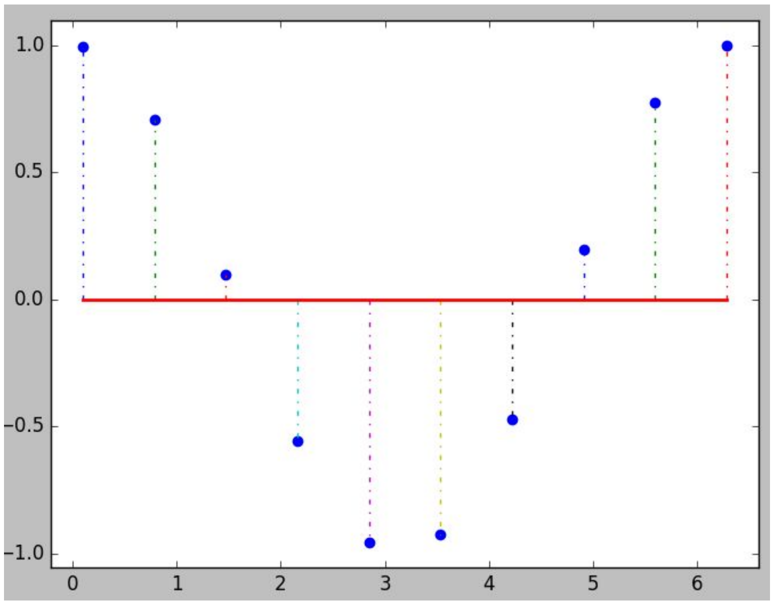
Unit-test Suite

Test case #1: Testing existing vertical stem plot

>python python vert_stem_horo_base_existing.py

Expected Result: There should be a vertical stem plot with horizontal baseline

Purpose: Ensure that additional augmentation does not break pre-existing functionality

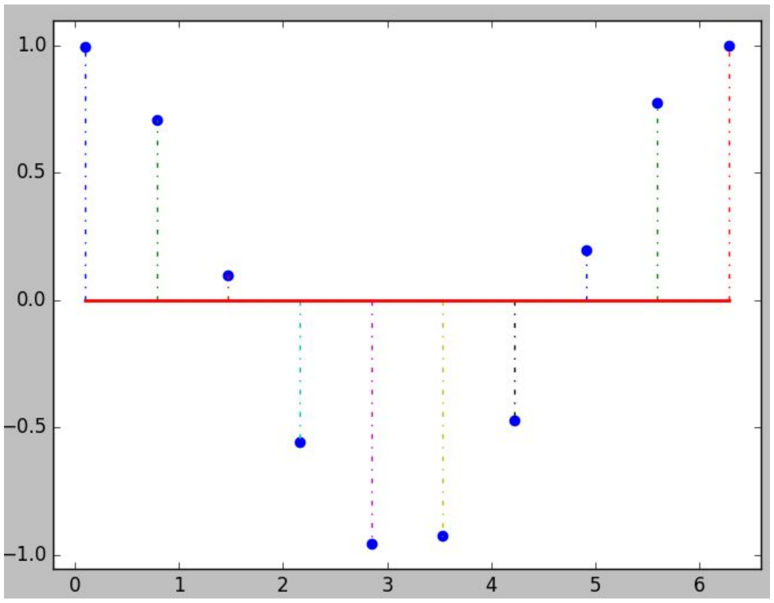


Test case #2: Testing vertical stem plot with orientation=’vertical’

>python vert_stem_horo_base_new.py

Expected Result: There should be a vertical stem plot with horizontal baseline

Purpose: Ensure user is able to create vertical stem plot with horizontal baseline while giving the orientation=’vertical’ argument.

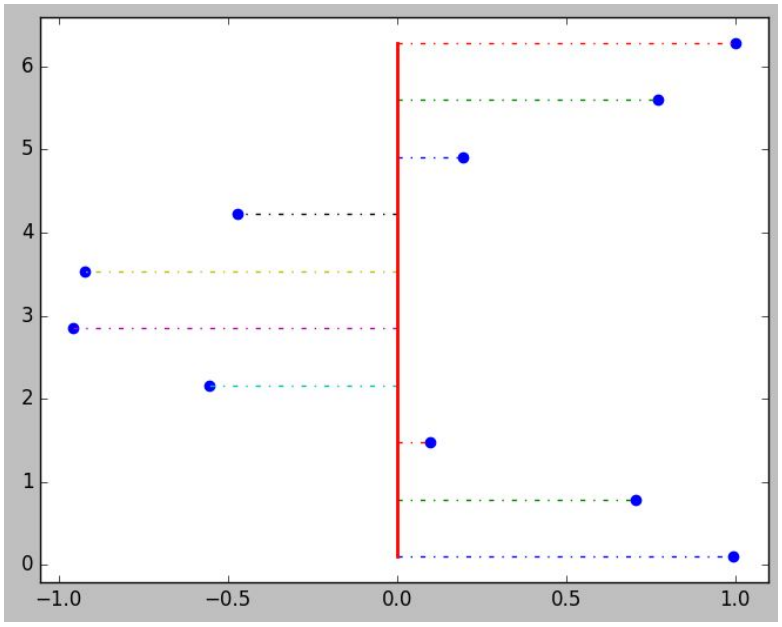


Test case #3: Testing horizontal stem plot with orientation='horizontal'

>python horo_stem_vert_base_new.py

Expected Result: There should be a horizontal stem plot with vertical baseline

Purpose: Ensure user is able to create horizontal stem plot with vertical baseline while giving the orientation='horizontal' argument.



Bonus Feature - Accepting figure argument in subplot2grid #6105

Description:
Previous code forces the use of the current figure with fig = gcf() in the function which result in the limitation of figure. There is an easy way to remove this limitation. Adding a new argument in subplot2grid function to allow user phrase in a different figure.

```
def subplot2grid(shape, loc, rowspan=1, colspan=1, fig=None,
**kwargs):
```

Make fig to be None initially and assign it to current figure if user does not give any specific figure.

```
    if fig == None:
        fig = gcf()
```

User Guide:

User can simply create a new figure and phrasing as an argument into subplot2grid function.
ax1 = plt.subplot2grid((3,3), (0,0), colspan=3, **fig=plt.figure(0)**)
ax2 = plt.subplot2grid((3,3), (0,0), colspan=3, fig=**plt.figure(1, facecolor='red')**)

This two will produce two different figures at the same time.

User Acceptance Tests

Regression tests will be run in order to ensure that the introduction of the feature does not break pre-existing functionality.

```
> python tests.py
```

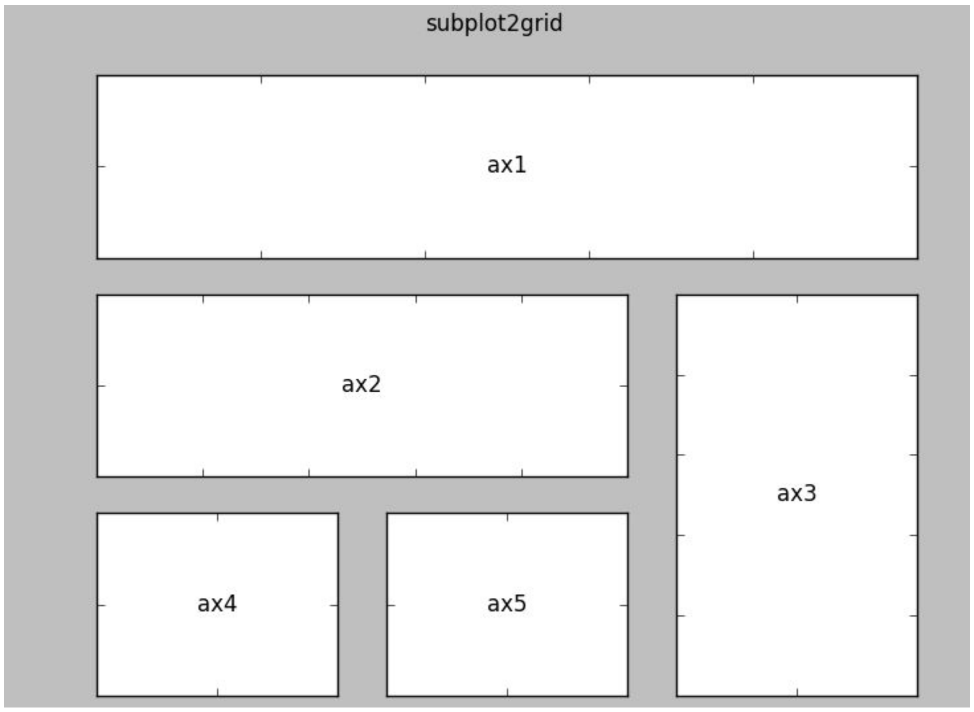
Unit-test Suite

Test case #1: Testing subplot2grid without phrasing fig argument

```
>python normal_subplot2grid_with_default_fig.py
```

Expected result: Should used the default figure and have five axes with correct colspan and rowspan.

Actual result: Using the default figure with five axes in the correct position



Test case #2: Testing subplot2grid with two different figures
>python subplot2grid_two_fig_argument.py
Expected result: Produce two different figures with Title **Figure 0** and **Figure 5**
Actual result: Produce two different figures with Title **Figure 0** and **Figure 5**

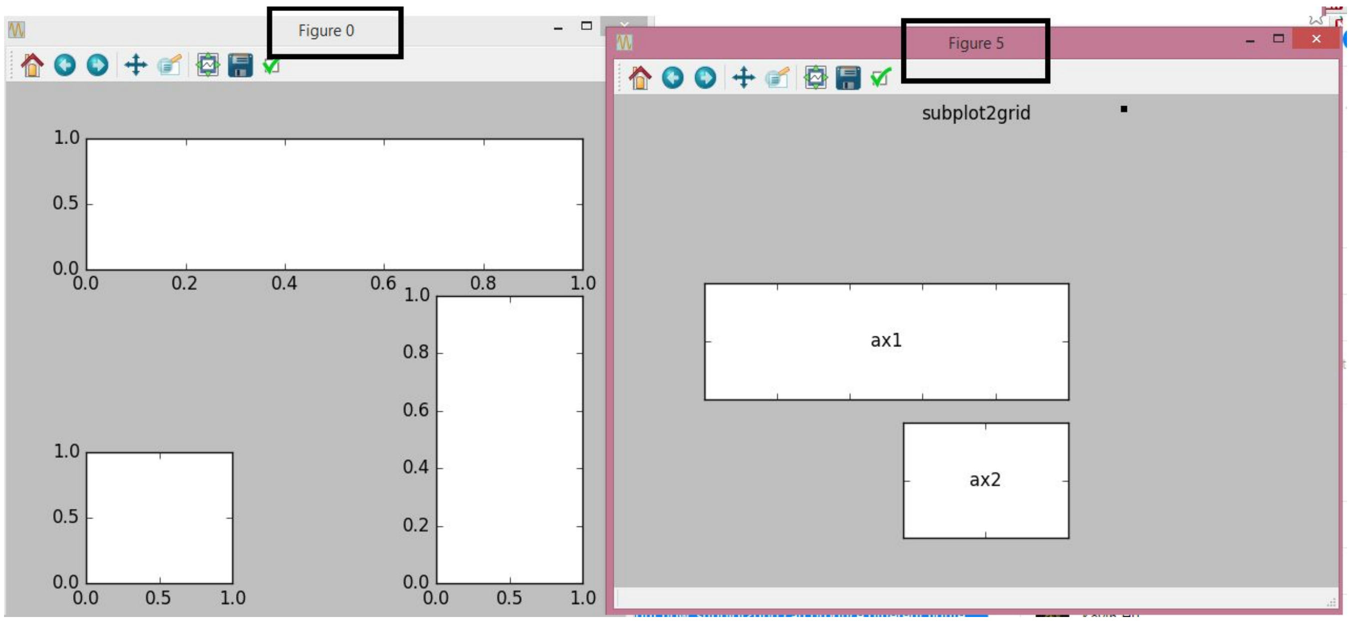


Figure 0
1.0
0.5
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Figure 5
subplot2grid
ax1
ax2