Matplotlib 03_ Multiple Subplots

June 4, 2022

0.1 Multiple Subplots

1. Simple Line Plot
2. Multiple Subplots dengan OO Style
3. Multiple Subplots dengan pyplot Style

0.1.1 Import Modules

[1]:
```
%matplotlib inline
```

[2]:
```
import matplotlib
import matplotlib.pyplot as plt
import numpy as np

print(matplotlib.__version__)
print(np.__version__)
```

```
3.3.4
1.20.1
```

0.1.2 1. Simple Line Plot

[3]:
```
x = np.arange(0.0, 2.0, 0.01)
x
```

[3]:
```
array([0.  , 0.01, 0.02, 0.03, 0.04, 0.05, 0.06, 0.07, 0.08, 0.09, 0.1 ,
       0.11, 0.12, 0.13, 0.14, 0.15, 0.16, 0.17, 0.18, 0.19, 0.2 , 0.21,
       0.22, 0.23, 0.24, 0.25, 0.26, 0.27, 0.28, 0.29, 0.3 , 0.31, 0.32,
       0.33, 0.34, 0.35, 0.36, 0.37, 0.38, 0.39, 0.4 , 0.41, 0.42, 0.43,
       0.44, 0.45, 0.46, 0.47, 0.48, 0.49, 0.5 , 0.51, 0.52, 0.53, 0.54,
       0.55, 0.56, 0.57, 0.58, 0.59, 0.6 , 0.61, 0.62, 0.63, 0.64, 0.65,
       0.66, 0.67, 0.68, 0.69, 0.7 , 0.71, 0.72, 0.73, 0.74, 0.75, 0.76,
       0.77, 0.78, 0.79, 0.8 , 0.81, 0.82, 0.83, 0.84, 0.85, 0.86, 0.87,
       0.88, 0.89, 0.9 , 0.91, 0.92, 0.93, 0.94, 0.95, 0.96, 0.97, 0.98,
       0.99, 1.  , 1.01, 1.02, 1.03, 1.04, 1.05, 1.06, 1.07, 1.08, 1.09,
       1.1 , 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.2 ,
       1.21, 1.22, 1.23, 1.24, 1.25, 1.26, 1.27, 1.28, 1.29, 1.3 , 1.31,
       1.32, 1.33, 1.34, 1.35, 1.36, 1.37, 1.38, 1.39, 1.4 , 1.41, 1.42,
```

```
       1.43, 1.44, 1.45, 1.46, 1.47, 1.48, 1.49, 1.5 , 1.51, 1.52, 1.53,
       1.54, 1.55, 1.56, 1.57, 1.58, 1.59, 1.6 , 1.61, 1.62, 1.63, 1.64,
       1.65, 1.66, 1.67, 1.68, 1.69, 1.7 , 1.71, 1.72, 1.73, 1.74, 1.75,
       1.76, 1.77, 1.78, 1.79, 1.8 , 1.81, 1.82, 1.83, 1.84, 1.85, 1.86,
       1.87, 1.88, 1.89, 1.9 , 1.91, 1.92, 1.93, 1.94, 1.95, 1.96, 1.97,
       1.98, 1.99])
```

[4]:
```
s = np.sin(2 * np.pi * x)
s
```

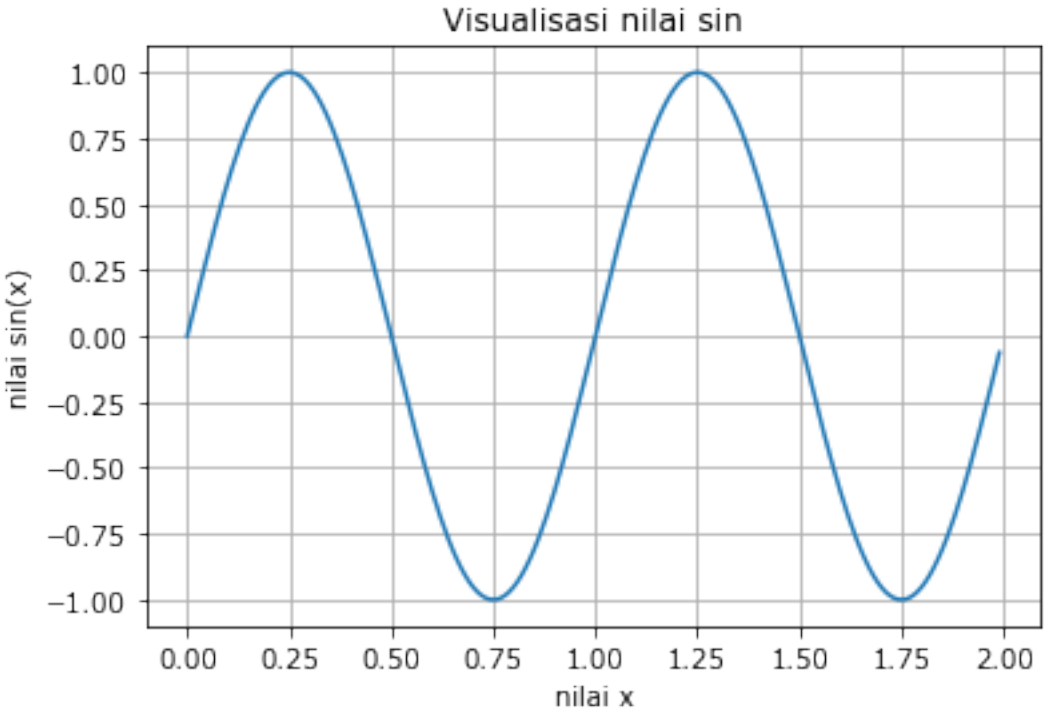
[4]:
```
array([ 0.00000000e+00,  6.27905195e-02,  1.25333234e-01,  1.87381315e-01,
        2.48689887e-01,  3.09016994e-01,  3.68124553e-01,  4.25779292e-01,
        4.81753674e-01,  5.35826795e-01,  5.87785252e-01,  6.37423990e-01,
        6.84547106e-01,  7.28968627e-01,  7.70513243e-01,  8.09016994e-01,
        8.44327926e-01,  8.76306680e-01,  9.04827052e-01,  9.29776486e-01,
        9.51056516e-01,  9.68583161e-01,  9.82287251e-01,  9.92114701e-01,
        9.98026728e-01,  1.00000000e+00,  9.98026728e-01,  9.92114701e-01,
        9.82287251e-01,  9.68583161e-01,  9.51056516e-01,  9.29776486e-01,
        9.04827052e-01,  8.76306680e-01,  8.44327926e-01,  8.09016994e-01,
        7.70513243e-01,  7.28968627e-01,  6.84547106e-01,  6.37423990e-01,
        5.87785252e-01,  5.35826795e-01,  4.81753674e-01,  4.25779292e-01,
        3.68124553e-01,  3.09016994e-01,  2.48689887e-01,  1.87381315e-01,
        1.25333234e-01,  6.27905195e-02,  1.22464680e-16, -6.27905195e-02,
       -1.25333234e-01, -1.87381315e-01, -2.48689887e-01, -3.09016994e-01,
       -3.68124553e-01, -4.25779292e-01, -4.81753674e-01, -5.35826795e-01,
       -5.87785252e-01, -6.37423990e-01, -6.84547106e-01, -7.28968627e-01,
       -7.70513243e-01, -8.09016994e-01, -8.44327926e-01, -8.76306680e-01,
       -9.04827052e-01, -9.29776486e-01, -9.51056516e-01, -9.68583161e-01,
       -9.82287251e-01, -9.92114701e-01, -9.98026728e-01, -1.00000000e+00,
       -9.98026728e-01, -9.92114701e-01, -9.82287251e-01, -9.68583161e-01,
       -9.51056516e-01, -9.29776486e-01, -9.04827052e-01, -8.76306680e-01,
       -8.44327926e-01, -8.09016994e-01, -7.70513243e-01, -7.28968627e-01,
       -6.84547106e-01, -6.37423990e-01, -5.87785252e-01, -5.35826795e-01,
       -4.81753674e-01, -4.25779292e-01, -3.68124553e-01, -3.09016994e-01,
       -2.48689887e-01, -1.87381315e-01, -1.25333234e-01, -6.27905195e-02,
       -2.44929360e-16,  6.27905195e-02,  1.25333234e-01,  1.87381315e-01,
        2.48689887e-01,  3.09016994e-01,  3.68124553e-01,  4.25779292e-01,
        4.81753674e-01,  5.35826795e-01,  5.87785252e-01,  6.37423990e-01,
        6.84547106e-01,  7.28968627e-01,  7.70513243e-01,  8.09016994e-01,
        8.44327926e-01,  8.76306680e-01,  9.04827052e-01,  9.29776486e-01,
        9.51056516e-01,  9.68583161e-01,  9.82287251e-01,  9.92114701e-01,
        9.98026728e-01,  1.00000000e+00,  9.98026728e-01,  9.92114701e-01,
        9.82287251e-01,  9.68583161e-01,  9.51056516e-01,  9.29776486e-01,
        9.04827052e-01,  8.76306680e-01,  8.44327926e-01,  8.09016994e-01,
        7.70513243e-01,  7.28968627e-01,  6.84547106e-01,  6.37423990e-01,
        5.87785252e-01,  5.35826795e-01,  4.81753674e-01,  4.25779292e-01,
        3.68124553e-01,  3.09016994e-01,  2.48689887e-01,  1.87381315e-01,
```

```
 1.25333234e-01,  6.27905195e-02,  3.67394040e-16, -6.27905195e-02,
-1.25333234e-01, -1.87381315e-01, -2.48689887e-01, -3.09016994e-01,
-3.68124553e-01, -4.25779292e-01, -4.81753674e-01, -5.35826795e-01,
-5.87785252e-01, -6.37423990e-01, -6.84547106e-01, -7.28968627e-01,
-7.70513243e-01, -8.09016994e-01, -8.44327926e-01, -8.76306680e-01,
-9.04827052e-01, -9.29776486e-01, -9.51056516e-01, -9.68583161e-01,
-9.82287251e-01, -9.92114701e-01, -9.98026728e-01, -1.00000000e+00,
-9.98026728e-01, -9.92114701e-01, -9.82287251e-01, -9.68583161e-01,
-9.51056516e-01, -9.29776486e-01, -9.04827052e-01, -8.76306680e-01,
-8.44327926e-01, -8.09016994e-01, -7.70513243e-01, -7.28968627e-01,
-6.84547106e-01, -6.37423990e-01, -5.87785252e-01, -5.35826795e-01,
-4.81753674e-01, -4.25779292e-01, -3.68124553e-01, -3.09016994e-01,
-2.48689887e-01, -1.87381315e-01, -1.25333234e-01, -6.27905195e-02])
```

[5]:
```
fig, ax = plt.subplots() # OO Style

ax.plot(x, s)
ax.set(xlabel = 'nilai x',
       ylabel = 'nilai sin(x)',
       title = 'Visualisasi nilai sin')
ax.grid()

plt.show()
```



0.1.3 2. Multiple Subplots

2.1 Multiple Subplots dengan OO Style

[6]:
```
x1 = np.linspace(0.0, 5.0, 100)
x2 = np.linspace(0.0, 2.0, 100)

y1 = np.cos(2 * np.pi * x1)
y2 = np.cos(2 * np.pi * x2)
```

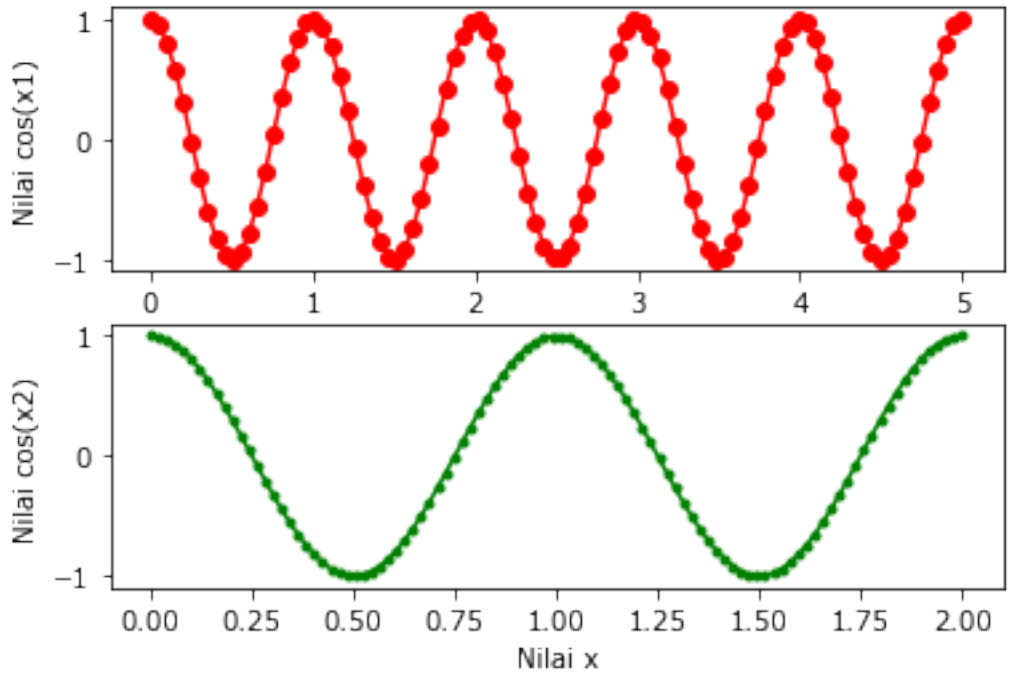
[7]:
```
fig, (ax1, ax2) = plt.subplots(2,1)

ax1.plot(x1, y1, 'ro-')
ax1.set_ylabel('Nilai cos(x1)')

ax2. plot(x2, y2, 'g.-')
ax2.set_ylabel('Nilai cos(x2)')

ax2.set_xlabel('Nilai x')

plt.show()
```



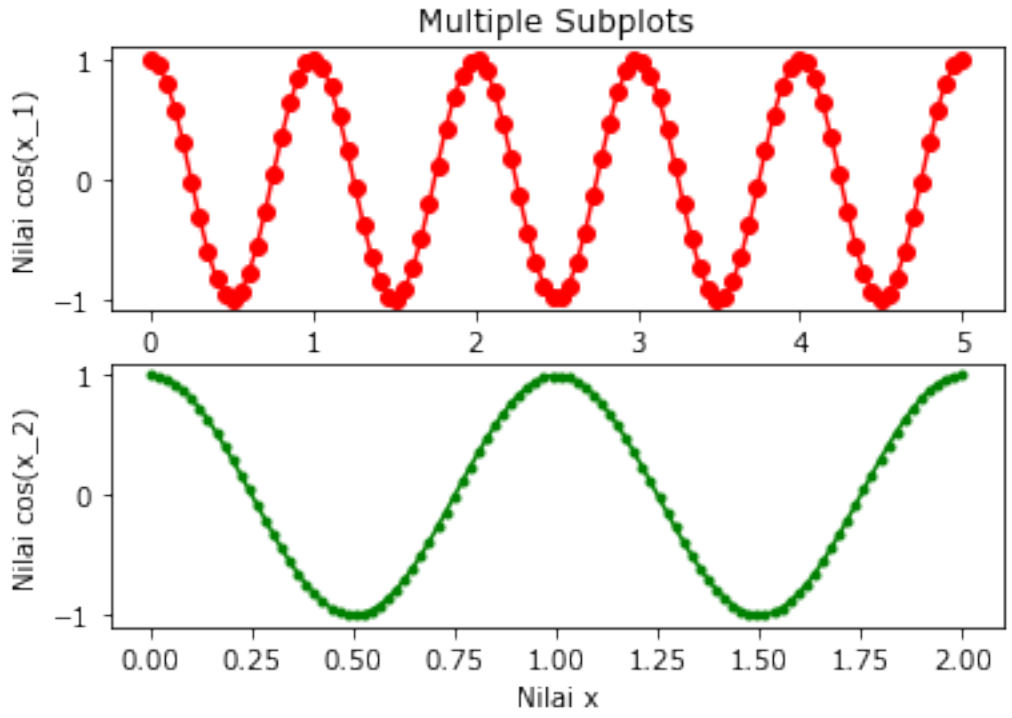
2.2 Multiple Subplots dengan pyplot style

[8]:
```
plt.subplot(2, 1, 1)
plt.plot(x1, y1, 'ro-')
```

```
plt.title('Multiple Subplots')
plt.ylabel('Nilai cos(x_1)')

plt.subplot(2, 1, 2)
plt.plot(x2, y2, 'g.-')
plt.ylabel('Nilai cos(x_2)')
plt.xlabel('Nilai x')

plt.show()
```



[ ]: