Python Course

Matplotlib

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Matplotlib

```
pip install matplotlib
```

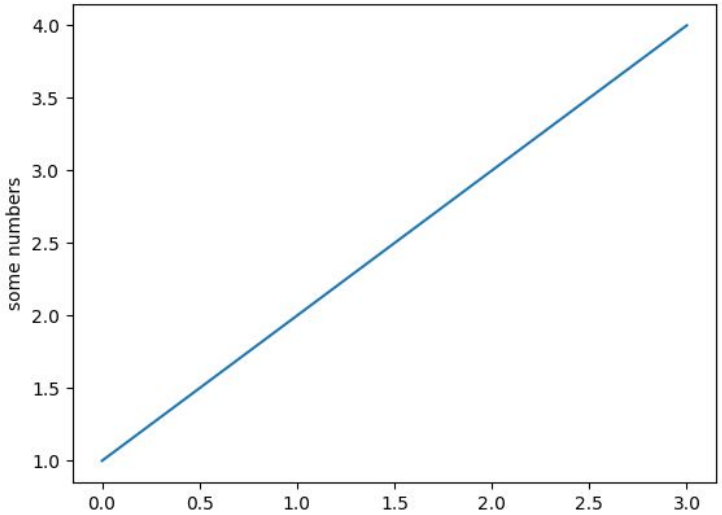
Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python.

Intro to pyplot

matplotlib.pyplot is a collection of functions that make matplotlib work like MATLAB. Each pyplot function makes some change to a figure: e.g., creates a figure, creates a plotting area in a figure, plots some lines in a plotting area, decorates the plot with labels, etc.

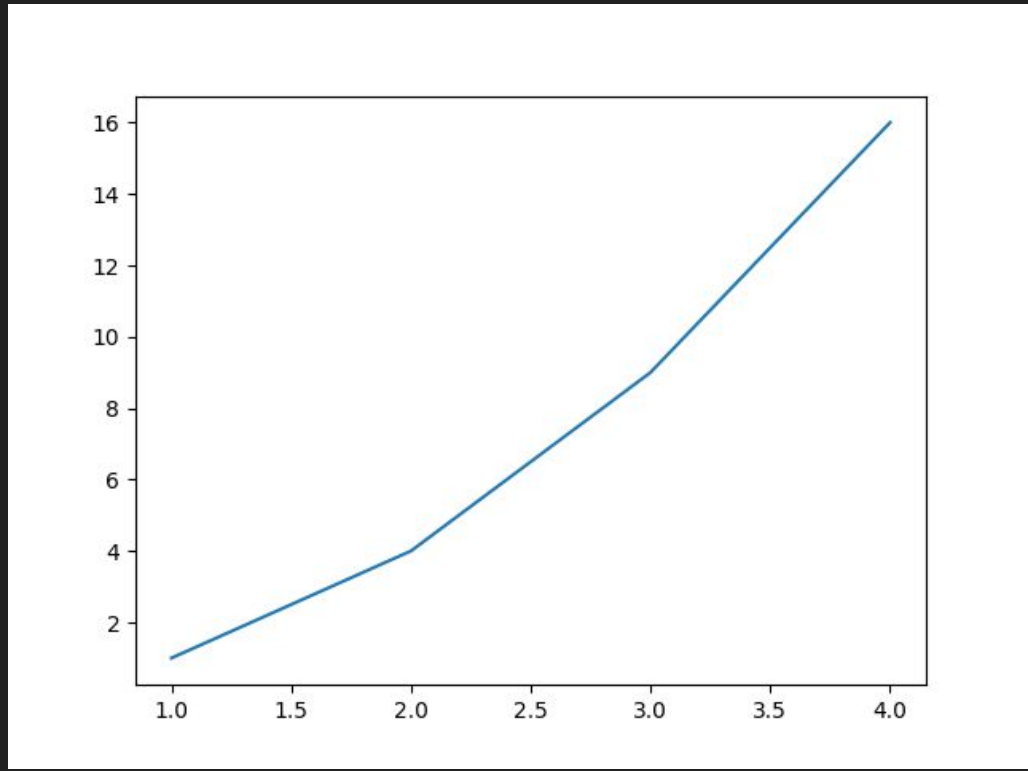
python :)

```
import matplotlib.pyplot as plt
plt.plot([1, 2, 3, 4])
plt.ylabel('some numbers')
plt.show()
```



python :)

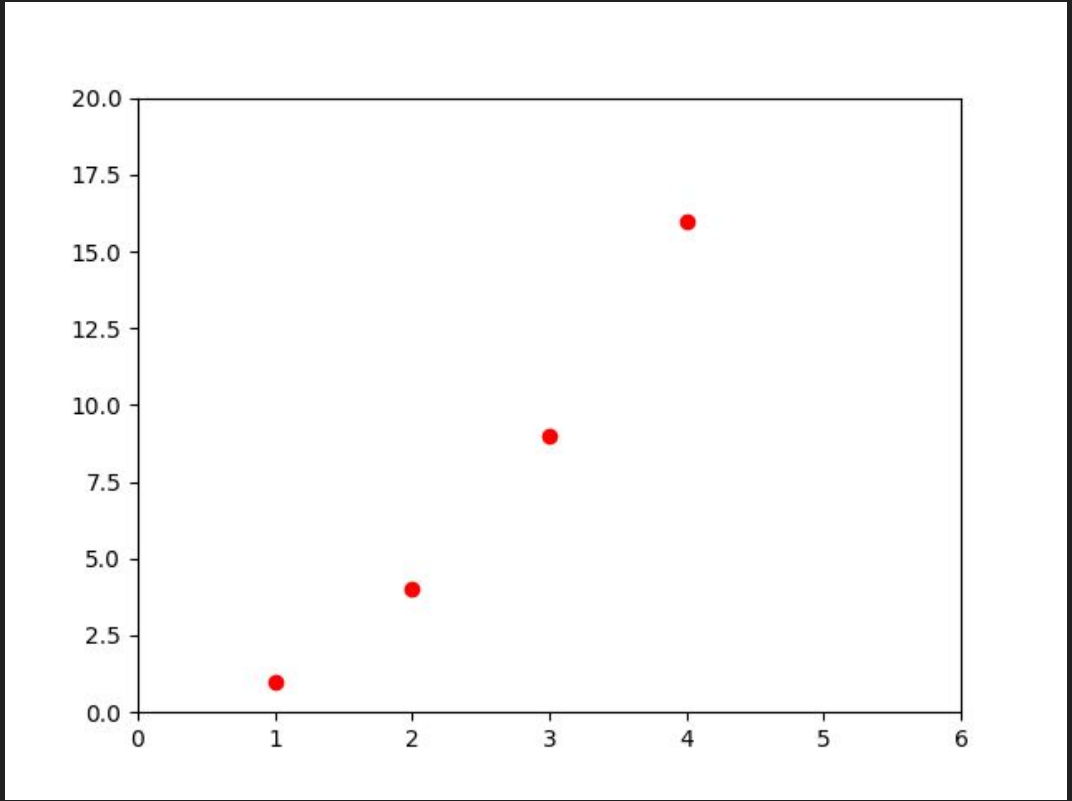
```
plt.plot([1, 2, 3, 4], [1, 4, 9, 16])
```



Formatting the style of your plot

python :)

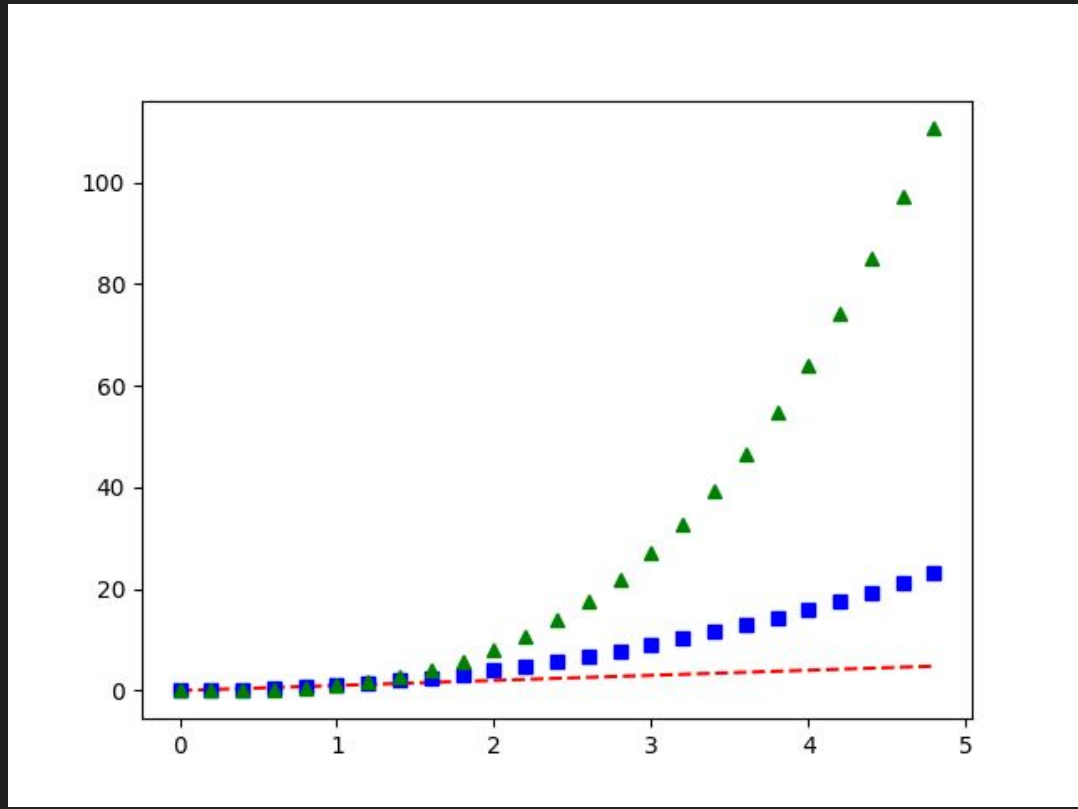
```
plt.plot([1, 2, 3, 4], [1, 4, 9,
16], 'ro')
plt.axis([0, 6, 0, 20])
plt.show()
```



Formatting the style of your plot

python :)

```
import numpy as np

# evenly sampled time at 200ms
intervals
t = np.arange(0., 5., 0.2)

# red dashes, blue squares and green
triangles
plt.plot(t, t, 'r--', t, t**2, 'bs',
t, t**3, 'g^')
plt.show()
```

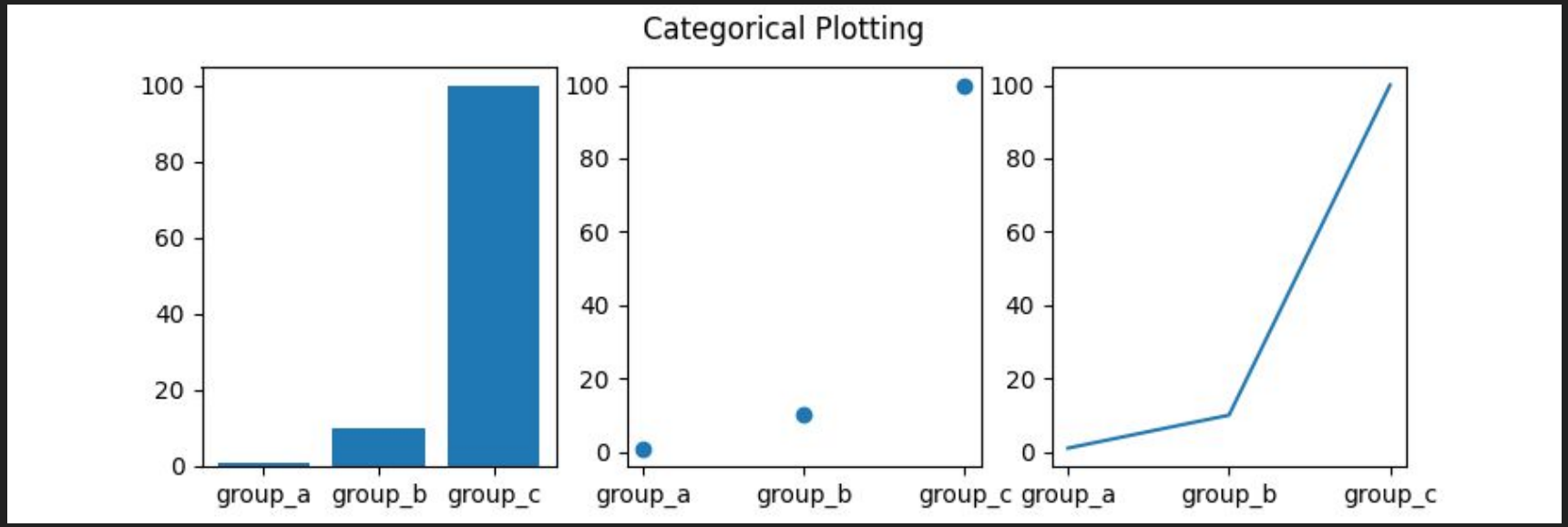


Plotting with categorical variables

python :)

```
names = ['group_a', 'group_b',
'group_c']
values = [1, 10, 100]

plt.figure(figsize=(9, 3))

plt.subplot(131)
plt.bar(names, values)
plt.subplot(132)
plt.scatter(names, values)
plt.subplot(133)
plt.plot(names, values)
plt.suptitle('Categorical Plotting')
plt.show()
```

Plotting with categorical variables

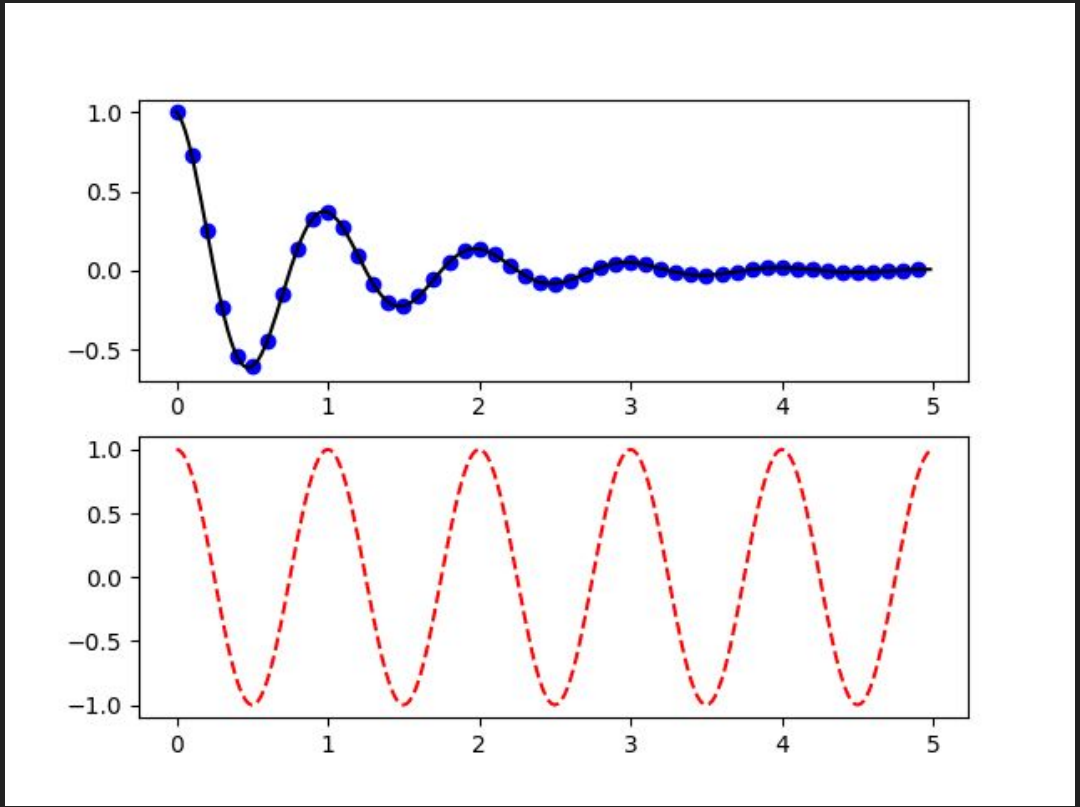


Working with multiple figures and axes

python :)

```
def f(t):
    return np.exp(-t) *
np.cos(2*np.pi*t)

t1 = np.arange(0.0, 5.0, 0.1)
t2 = np.arange(0.0, 5.0, 0.02)

plt.figure()
plt.subplot(211)
plt.plot(t1, f(t1), 'bo', t2, f(t2),
'k')

plt.subplot(212)
plt.plot(t2, np.cos(2*np.pi*t2), 'r-
-')
plt.show()
```

Working with multiple figures and axes

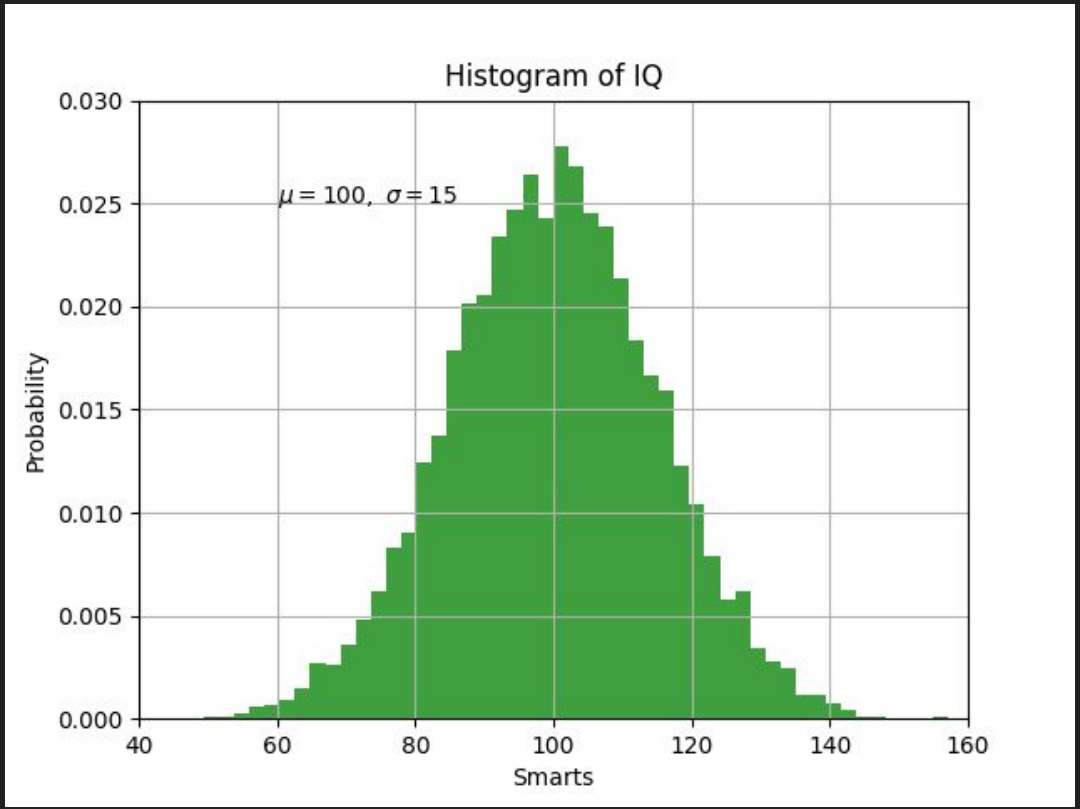


Working with text

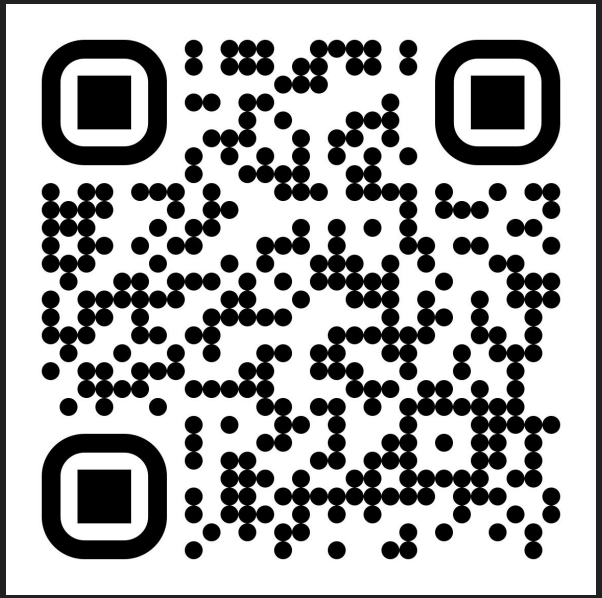
python :)

```
mu, sigma = 100, 15
x = mu + sigma *
np.random.randn(10000)

# the histogram of the data
n, bins, patches = plt.hist(x, 50,
density=True, facecolor='g',
alpha=0.75)


plt.xlabel('Smarts')
plt.ylabel('Probability')
plt.title('Histogram of IQ')
plt.text(60, .025, r'$\mu=100,\
\sigma=15$')
plt.axis([40, 160, 0, 0.03])
plt.grid(True)
plt.show()
```

Working with text



Any Questions?



THANK YOU