pandas and seaborn

In [1]:

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

In [2]:

```
%matplotlib inline
```

obj.plot(use_index, xlim, xticks, xlabel, rot, logy, figsize, label, legend, title, kind, style, alpha, grid, ax) :

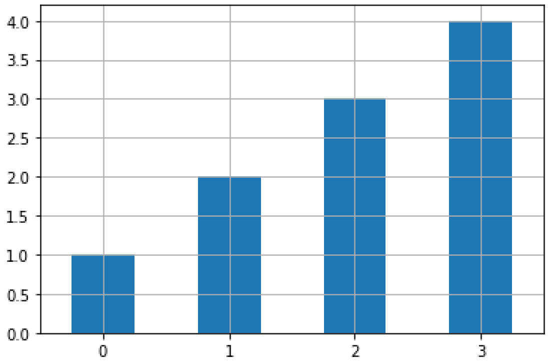
> ***use_index*** : 是否将对象索引用作刻度标签
> ***xlim*** : x轴界限, ***xticks*** : x轴刻度值, ***xlabel*** : x轴名称
> ***logy*** : 是否在y轴使用对数标尺（ *log(p) → h* ）
> ***label, legend*** : 图例
> ***kind*** : 控制画图种类, 如: *'line', 'bar', 'barh', 'kde'*
> ***style*** : 控制画图属性, 如: *'ko--'*
> ***grid*** : 是否显示网格线
> ***ax*** : 指定要在其上进行绘制的 ***subplot*** 对象

In [3]:

```
fig, axes = plt.subplots(1,1)
s = pd.Series(np.array([1,2,3,4]))
s.plot(kind='bar', grid=True, rot=0)
```

Out[3]:

```
<AxesSubplot:>
```

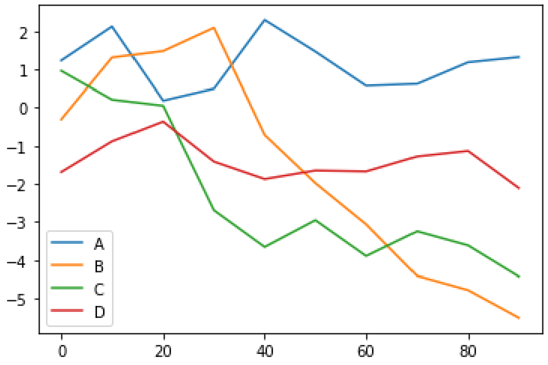


frame.plot(... ..., subplots, sharex, sharey, sortcolumns) :

> ***subplots*** : 是否将 frame 各列单独绘制
> ***sharex*** : *subplots=True* : 是否共用一个 x 轴, ***sharey*** : *subplots=True* : 是否共用一个 y 轴
> ***sort_columns*** : 是否以字母表顺序绘制各列

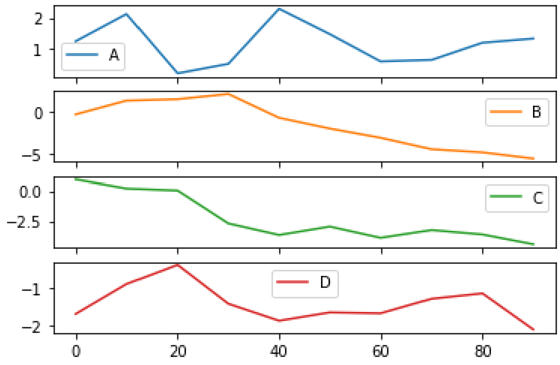
In [4]:
```
df = pd.DataFrame(np.random.randn(10, 4).cumsum(0),
                  columns=['A', 'B', 'C', 'D'],
                  index=np.arange(0, 100, 10))
df.plot()
```

Out[4]:
```
<AxesSubplot:>
```



In [5]:
```
df.plot(subplots=True)
```

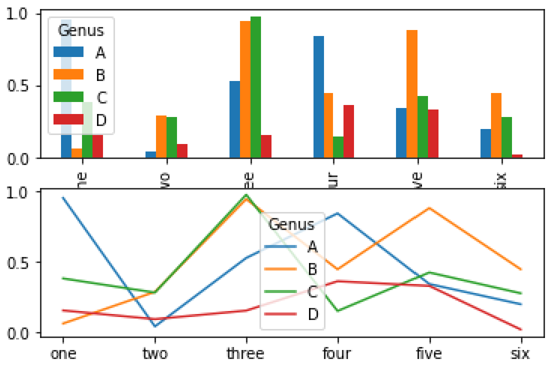
Out[5]:
```
array([<AxesSubplot:>, <AxesSubplot:>, <AxesSubplot:>, <AxesSubplot:>],
      dtype=object)
```



frame.plot.line(... ...) : 折线图

In [6]:
```
fig, axes = plt.subplots(2, 1)
fig.subplots_adjust()
data = pd.DataFrame(np.random.rand(6, 4),
                    index=['one', 'two', 'three', 'four', 'five', 'six'],
                    columns=pd.Index(['A', 'B', 'C', 'D'],
                    name='Genus'))
data.plot.bar(ax=axes[0])
data.plot.line(ax=axes[1])
```

Out[6]:
```
<AxesSubplot:>
```



frame.plot.bar(stacked, ...), frame.plot.barh(stacked, ...) : 条形图

In [7]:

```
data = pd.DataFrame(np.arange(1,25).reshape(4, 6).T,
                    index=['one', 'two', 'three', 'four', 'five', 'six'],
                    columns=pd.Index(['A', 'B', 'C', 'D'],
                    name='Genus'))
data
```

Out[7]:

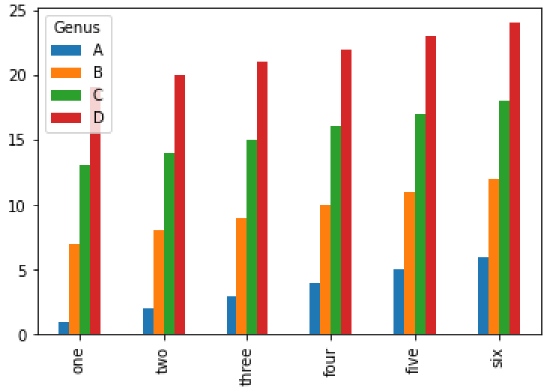
Genus	A	B	C	D
one	1	7	13	19
two	2	8	14	20
three	3	9	15	21
four	4	10	16	22
five	5	11	17	23
six	6	12	18	24

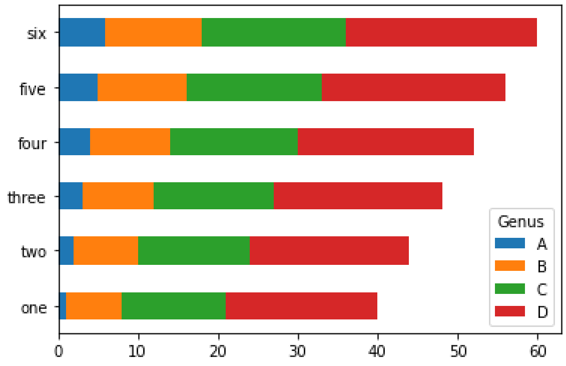
In [8]:

```
data.plot.bar()
data.plot.barh(stacked=True) #叠加
```

Out[8]:

```
<AxesSubplot:>
```





sns.barplot(data, x, y, hue, orient)：平均值及置信度

In [9]:

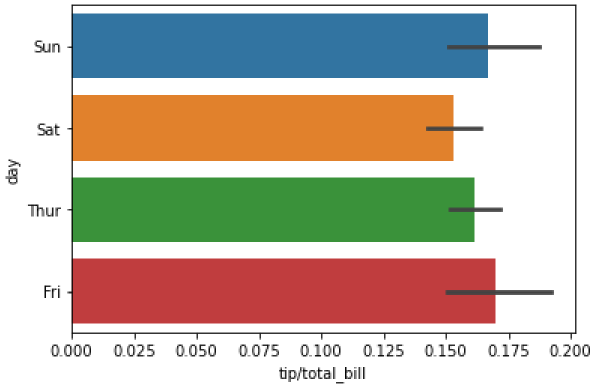
```
tips = pd.read_csv('pydata-book-2nd-edition/examples/tips.csv')
tips.head()
```

Out[9]:

	total_bill	tip	smoker	day	time	size
0	16.99	1.01	No	Sun	Dinner	2
1	10.34	1.66	No	Sun	Dinner	3
2	21.01	3.50	No	Sun	Dinner	3
3	23.68	3.31	No	Sun	Dinner	2
4	24.59	3.61	No	Sun	Dinner	4

```
In [10]: tips['tip/total_bill'] = tips['tip'] / tips['total_bill']
         sns.barplot(data=tips, x='tip/total_bill', y='day', orient='h')
```

```
Out[10]: <AxesSubplot:xlabel='tip/total_bill', ylabel='day'>
```



frame.plot.hist(bins, ...), frame.plot.density(...) : 直方图和密度图

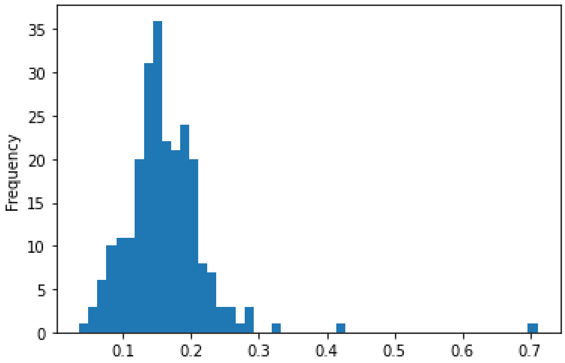
```
In [11]: tips = pd.read_csv('pydata-book-2nd-edition/examples/tips.csv')
         tips['tip/total_bill'] = tips['tip'] / tips['total_bill']
         tips.head()
```

Out[11]:

	total_bill	tip	smoker	day	time	size	tip/total_bill
0	16.99	1.01	No	Sun	Dinner	2	0.059447
1	10.34	1.66	No	Sun	Dinner	3	0.160542
2	21.01	3.50	No	Sun	Dinner	3	0.166587
3	23.68	3.31	No	Sun	Dinner	2	0.139780
4	24.59	3.61	No	Sun	Dinner	4	0.146808

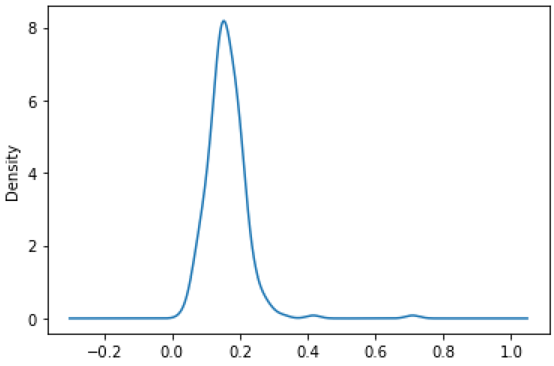
```
In [12]: tips['tip/total_bill'].plot.hist(bins=50)
```

```
Out[12]: <AxesSubplot:ylabel='Frequency'>
```



In [13]:
```
tips['tip/total_bill'].plot.density()
```

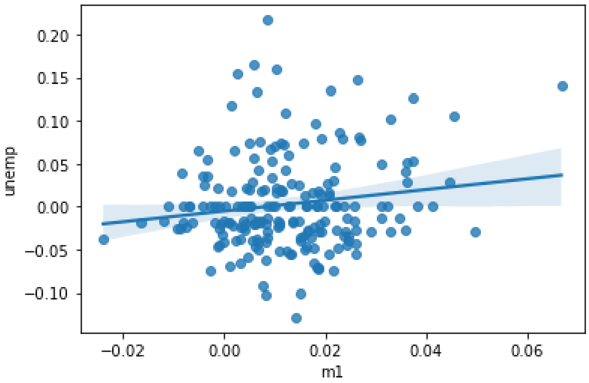
Out[13]:
```
<AxesSubplot:ylabel='Density'>
```



sns.regplot(data, x, y, hue)：散点图

In [14]:
```
macro = pd.read_csv('pydata-book-2nd-edition/examples/macrodata.csv')
data = macro[['cpi', 'm1', 'tbilrate', 'unemp']]
trans_data = np.log(data).diff().dropna()
trans_data.head()
sns.regplot(x = 'm1', y = 'unemp', data=trans_data)
```

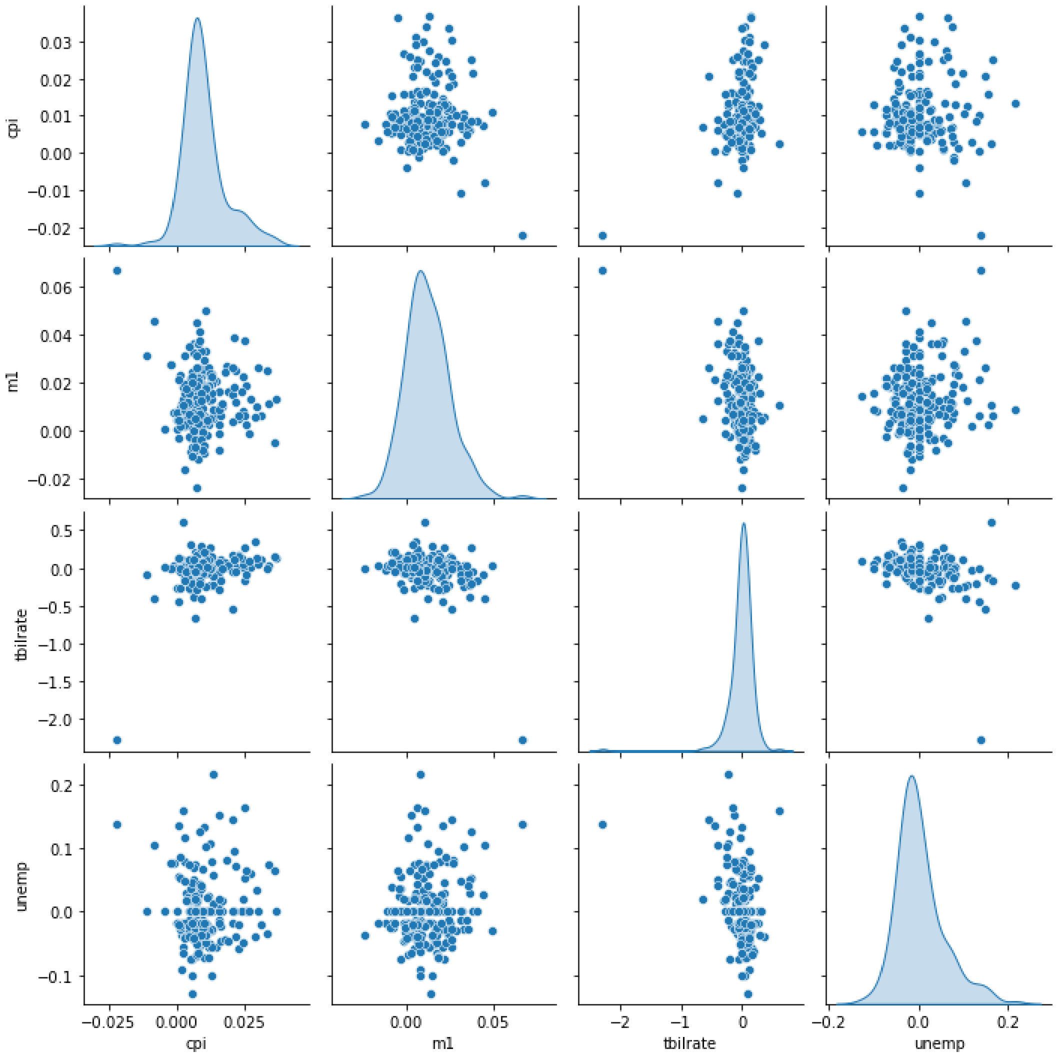
Out[14]:
```
<AxesSubplot:xlabel='m1', ylabel='unemp'>
```



sns.pairplot(data, diag_kind, plot_kws)：散步图矩阵

In [15]:
```
sns.pairplot(trans_data, diag_kind='kde')
```

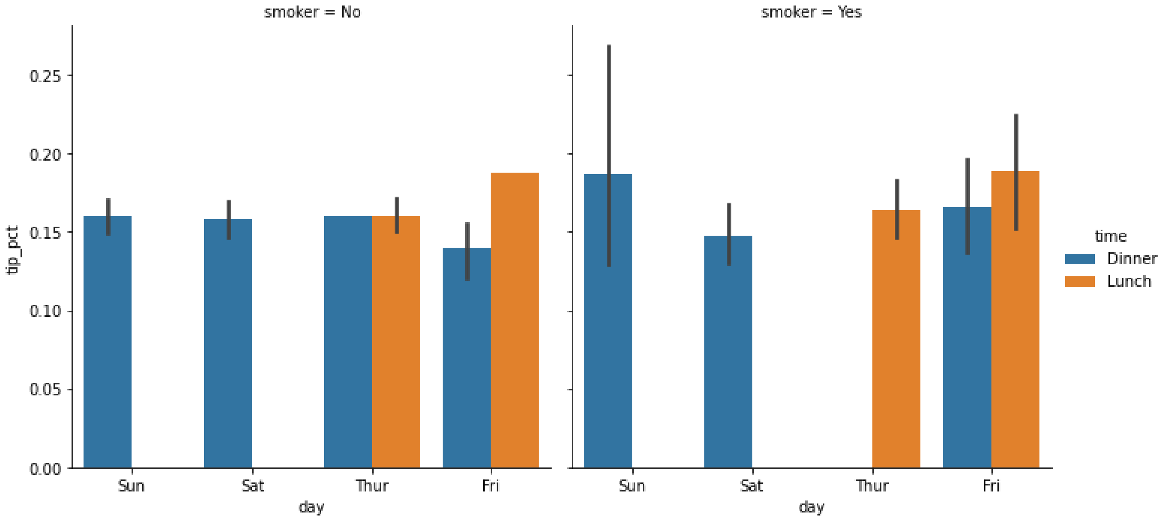
Out[15]:
```
<seaborn.axisgrid.PairGrid at 0x2244980c220>
```



sns.catplot(data, x, y, hue, row, col, kind) **: 分面网格**

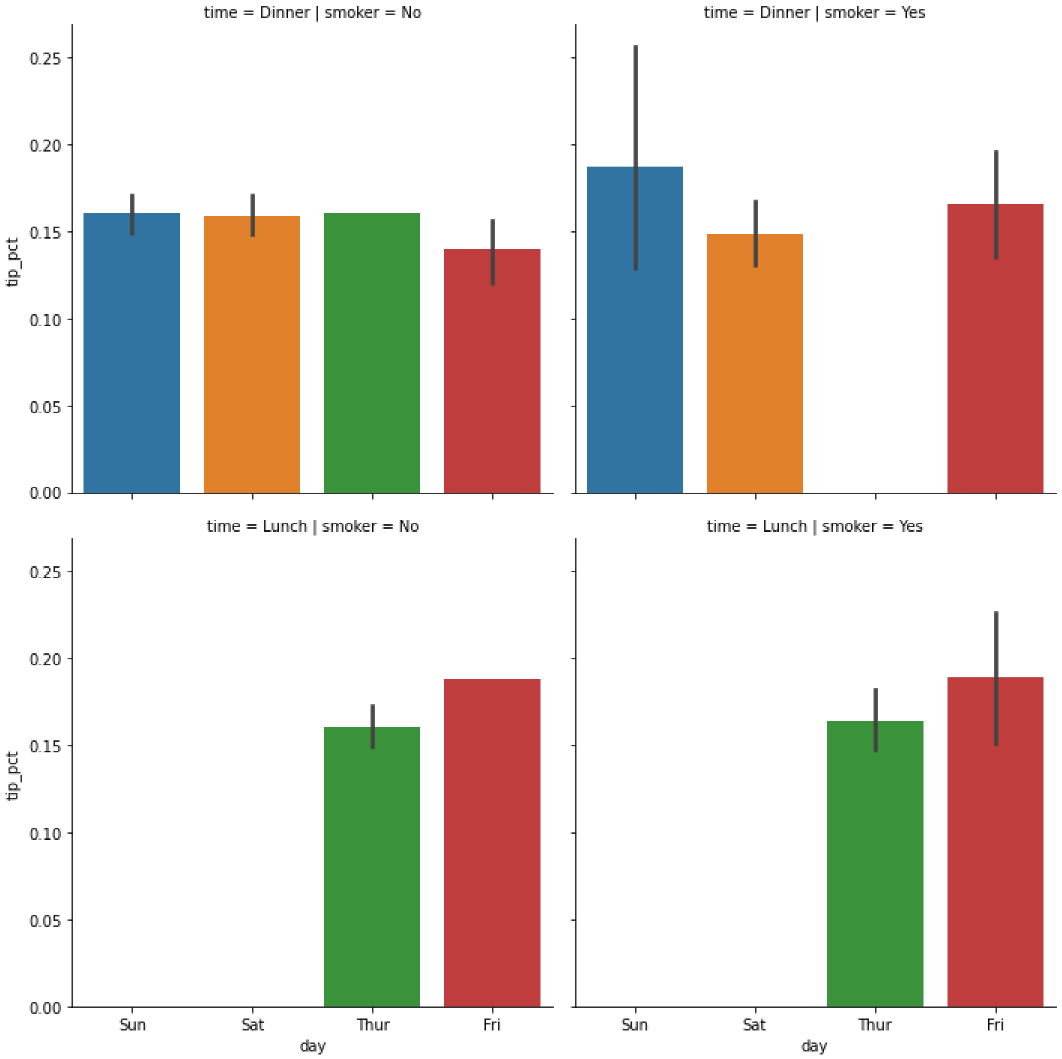
```
In [16]: tips = pd.read_csv('pydata-book-2nd-edition/examples/tips.csv')
         tips['tip_pct'] = tips['tip'] / tips['total_bill']
         sns.catplot(x='day', y='tip_pct', hue='time', col='smoker',
                     kind='bar', data=tips)
```

```
Out[16]: <seaborn.axisgrid.FacetGrid at 0x224497158b0>
```



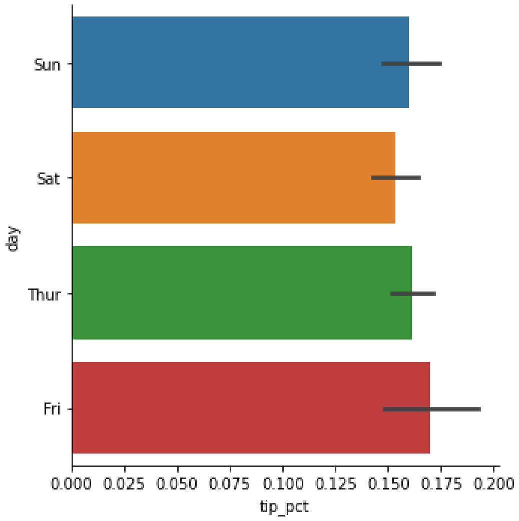
In [17]:
```
sns.catplot(x='day', y='tip_pct', row='time',
               col='smoker',
               kind='bar', data=tips)
```

Out[17]:
```
<seaborn.axisgrid.FacetGrid at 0x2244a232370>
```



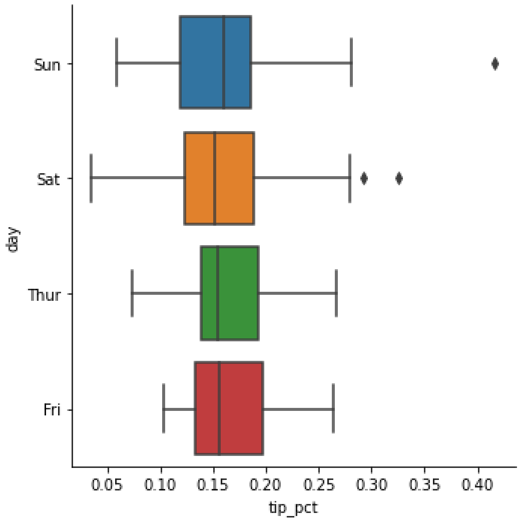
```
In [18]: sns.catplot(x='tip_pct', y='day', kind='bar',
                     data=tips[tips.tip_pct < 0.5])
```

```
Out[18]: <seaborn.axisgrid.FacetGrid at 0x2244a653100>
```



```
In [19]: sns.catplot(x='tip_pct', y='day', kind='box',
                     data=tips[tips.tip_pct < 0.5])
```

```
Out[19]: <seaborn.axisgrid.FacetGrid at 0x2244a830af0>
```


Sun
Sat
day
Thur
Fri
tip_pct