

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

```
In [17]: import pandas as pnd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
anscombe = sns.load_dataset("anscombe")
```

anscombe

	dataset	x	y
0	I	10.0	8.04
1	I	8.0	6.95
2	I	13.0	7.58
3	I	9.0	8.81
4	I	11.0	8.33
5	I	14.0	9.96
6	I	6.0	7.24
7	I	4.0	4.26
8	I	12.0	10.84
9	I	7.0	4.82
10	I	5.0	5.68
11	II	10.0	9.14
12	II	8.0	8.14
13	II	13.0	8.74

```
In [8]: dataset_1 = anscombe[anscombe['dataset']=='I']
```

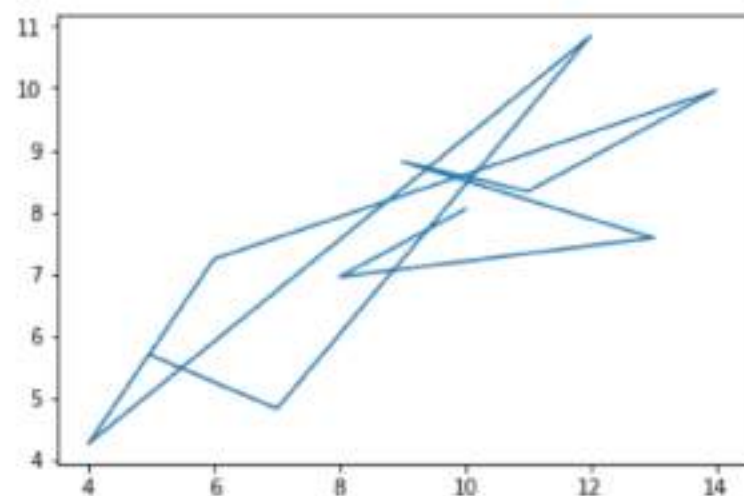
```
In [9]: dataset_1
```

```
Out[9]:
```

	dataset	x	y
0	I	10.0	8.04
1	I	8.0	6.95
2	I	13.0	7.58
3	I	9.0	8.81
4	I	11.0	8.33
5	I	14.0	9.96
6	I	6.0	7.24
7	I	4.0	4.26
8	I	12.0	10.84
9	I	7.0	4.82
10	I	5.0	5.68

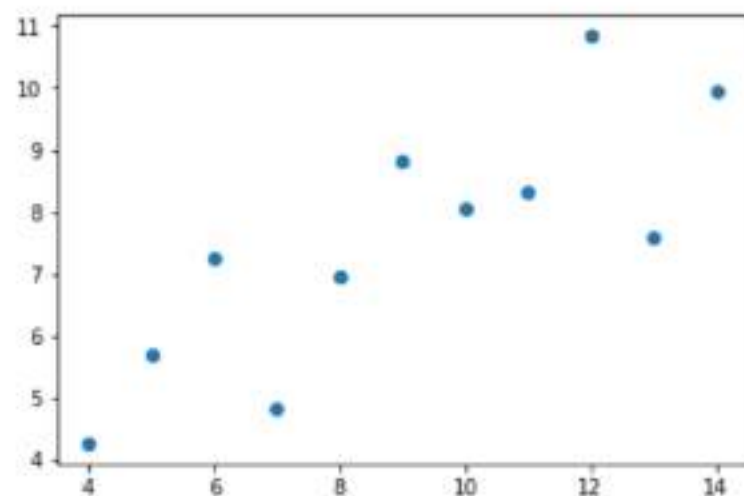
```
In [10]: plt.plot(dataset_1['x'],dataset_1['y'])
```

```
Out[10]: [<matplotlib.lines.Line2D at 0x1a134b2e80>]
```



```
In [13]: plt.plot(dataset_1['x'],dataset_1['y'],'o')
```

```
Out[13]: [<matplotlib.lines.Line2D at 0x1a1f2a8278>]
```



```
In [14]: dataset_2=anscombe[anscombe['dataset']=='II']  
dataset_3=anscombe[anscombe['dataset']=='III']  
dataset_4=anscombe[anscombe['dataset']=='IV']
```

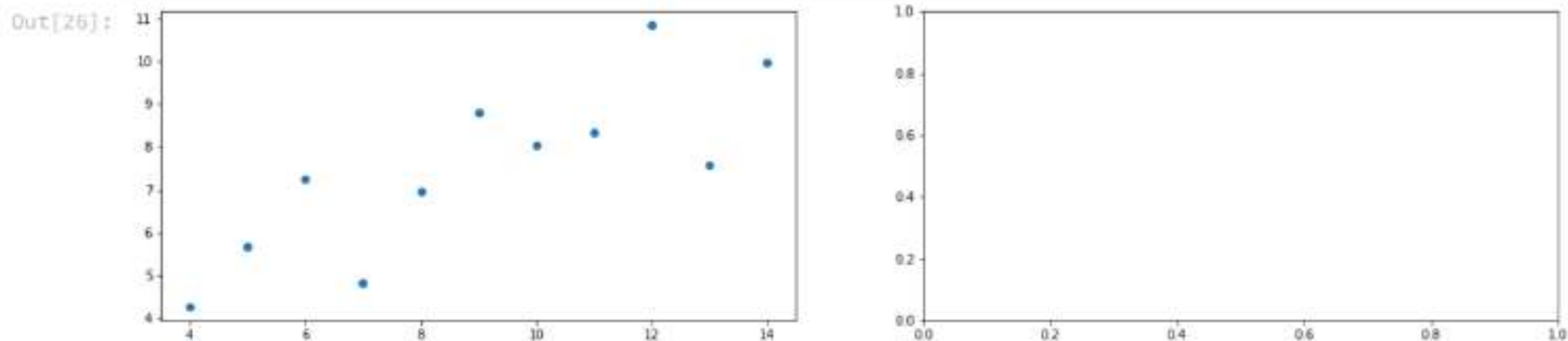
```
In [23]: fig=plt.figure(figsize=(20,10))  
  
<Figure size 1440x720 with 0 Axes>
```

```
In [24]: axes_1=fig.add_subplot(2,2,1)  
axes_2=fig.add_subplot(2,2,2)  
axes_3=fig.add_subplot(2,2,3)  
axes_4=fig.add_subplot(2,2,4)
```

```
In [25]: axes_1.plot(dataset_1['x'],dataset_1['y'],'o')
```

```
Out[25]: [<matplotlib.lines.Line2D at 0x1a1eabdfdf0>]
```

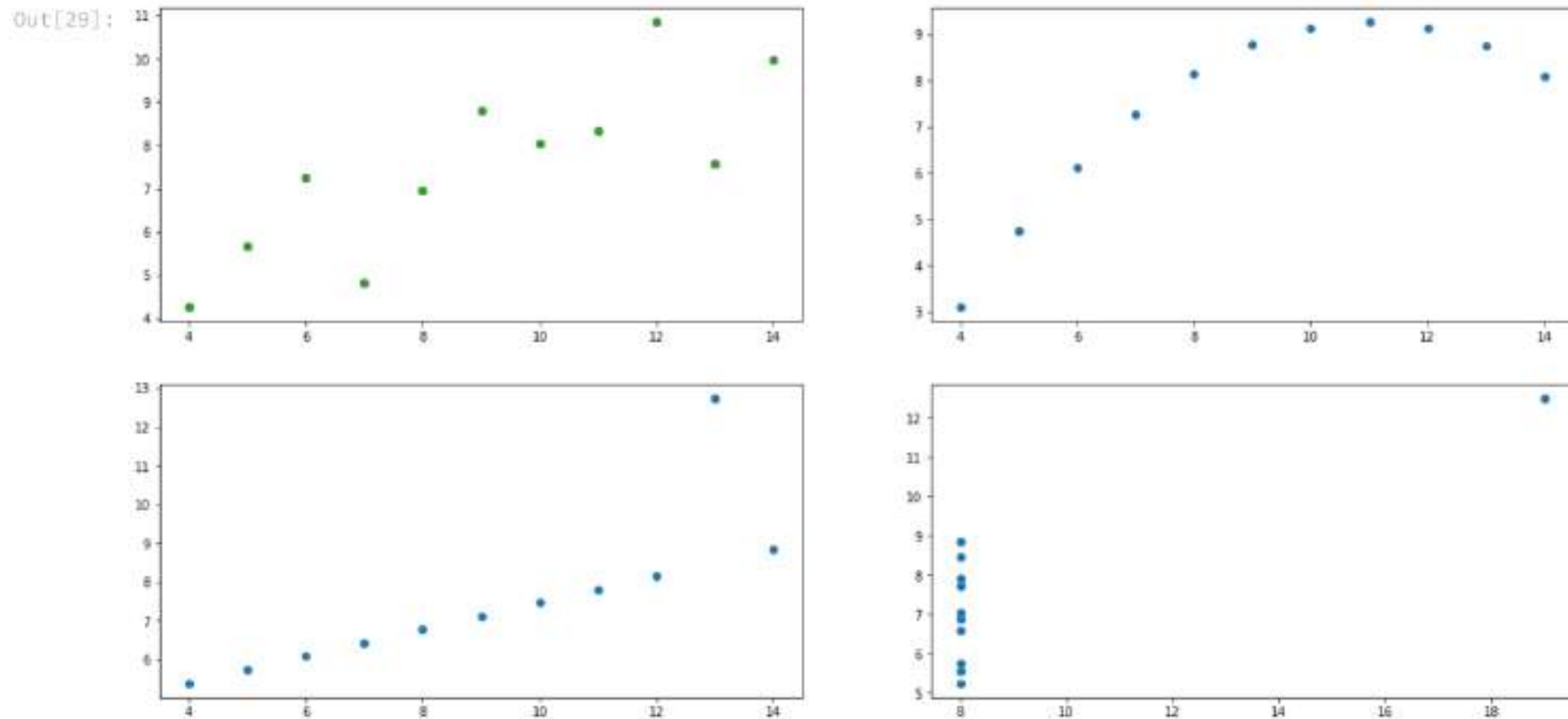
```
In [26]: fig
```



```
In [28]: axes_1.plot(dataset_1['x'],dataset_1['y'],'o')  
axes_2.plot(dataset_2['x'],dataset_2['y'],'o')  
axes_3.plot(dataset_3['x'],dataset_3['y'],'o')  
axes_4.plot(dataset_4['x'],dataset_4['y'],'o')
```

```
Out[28]: [<matplotlib.lines.Line2D at 0x1af821ba8>]
```

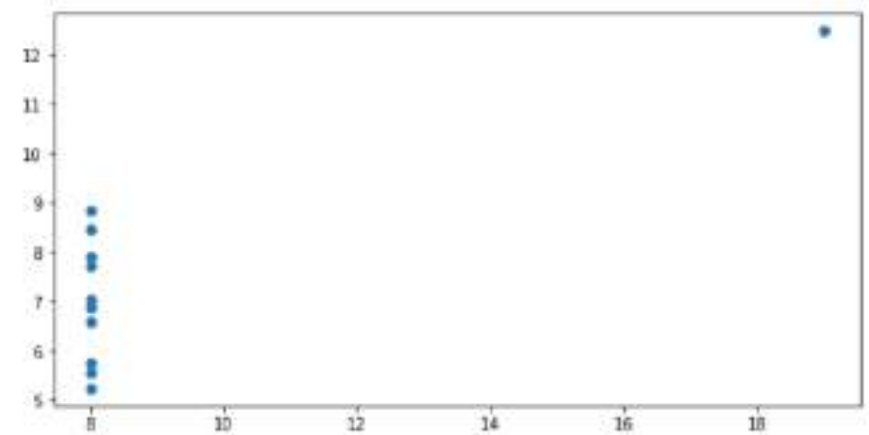
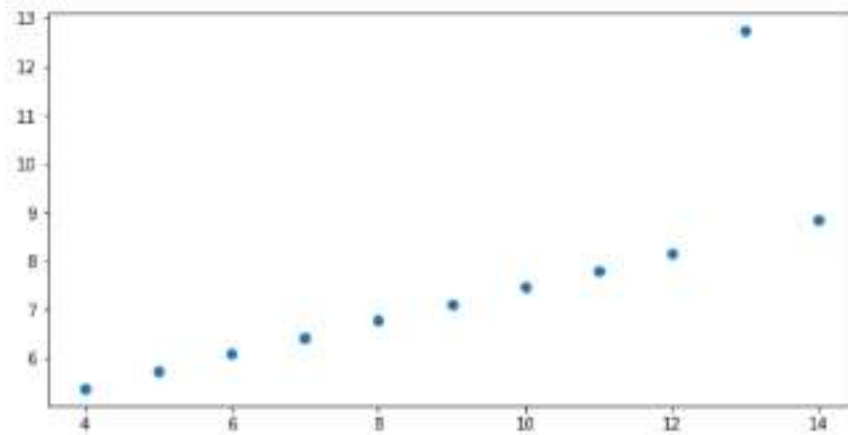
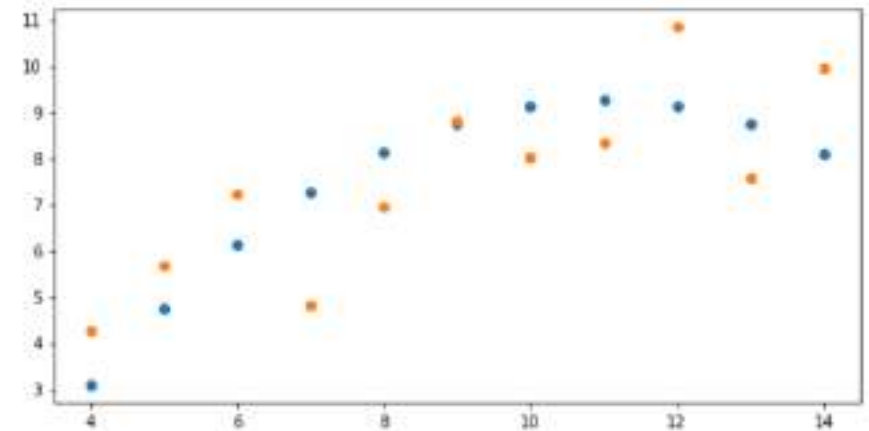
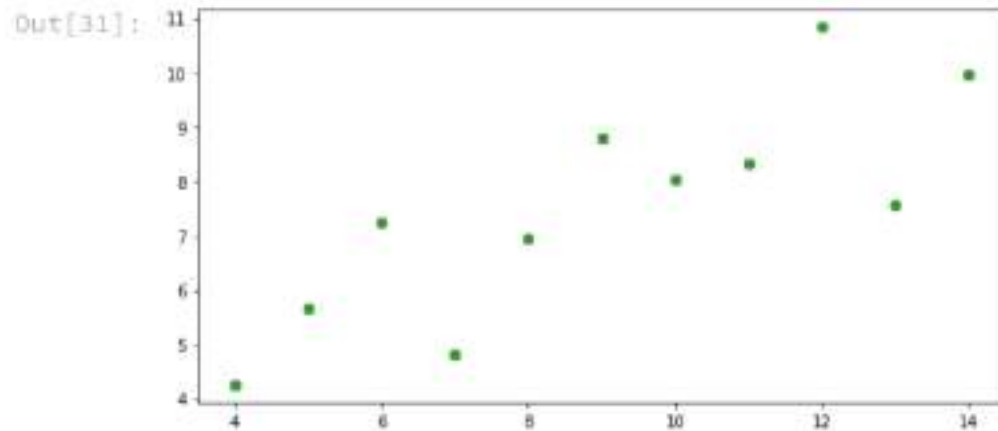
```
In [29]: fig
```



```
In [30]: axes_2.plot(dataset_1['x'],dataset_1['y'],'o')
```

```
Out[30]: [<matplotlib.lines.Line2D at 0x1a1f5d4048>]
```

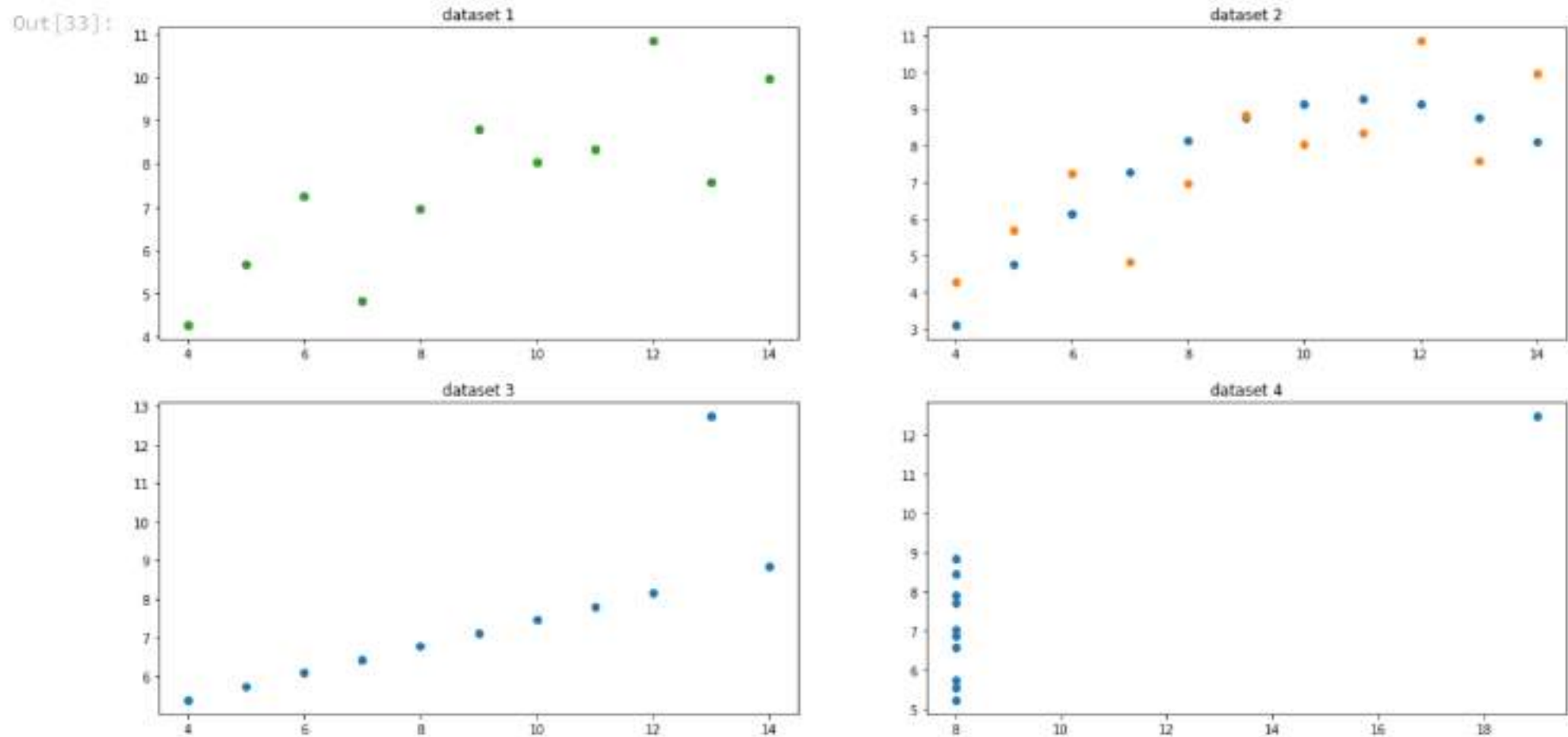
```
In [31]: fig
```



```
In [32]: axes_1.set_title("dataset 1")
axes_2.set_title("dataset 2")
axes_3.set_title("dataset 3")
axes_4.set_title("dataset 4")
```

```
Out[32]: Text(0.5,1,'dataset 4')
```

```
In [33]: fig
```



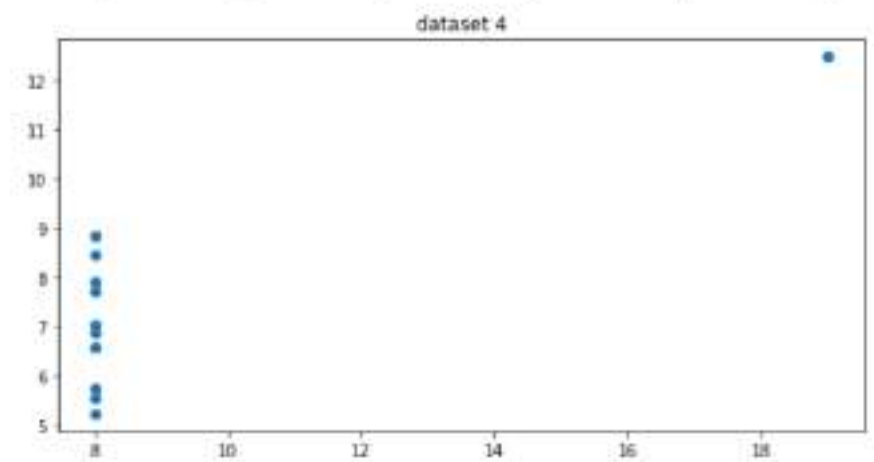
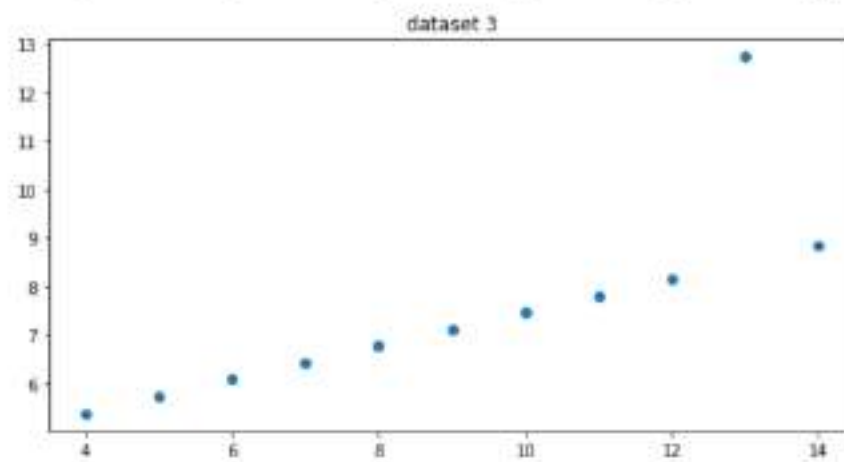
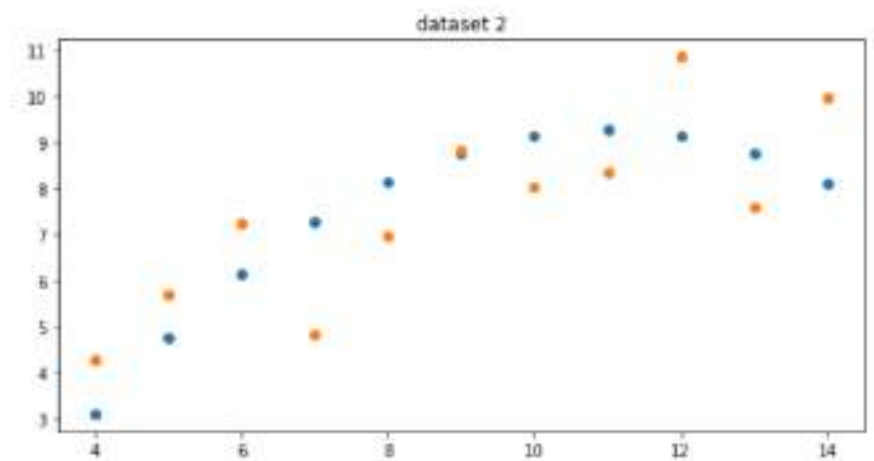
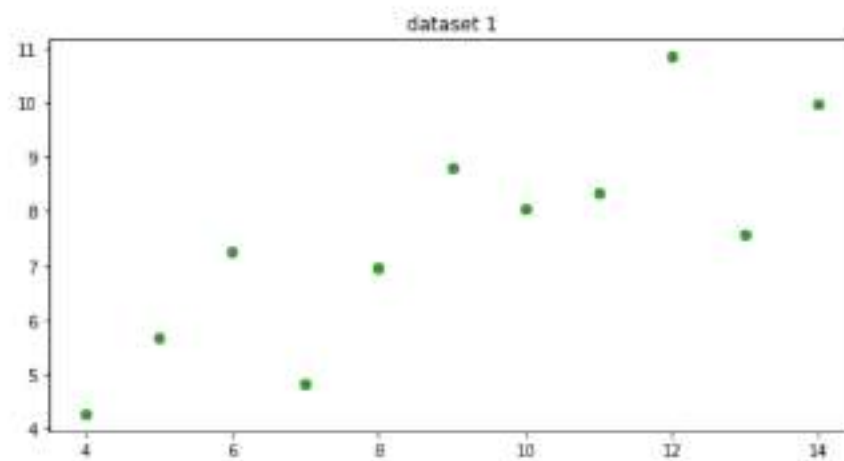
```
In [34]: fig.suptitle("Anscombe data")
```

```
Out[34]: Text(0.5,0.98,'Anscombe data')
```

```
In [35]: fig
```

```
Out[35]:
```

Anscombe data



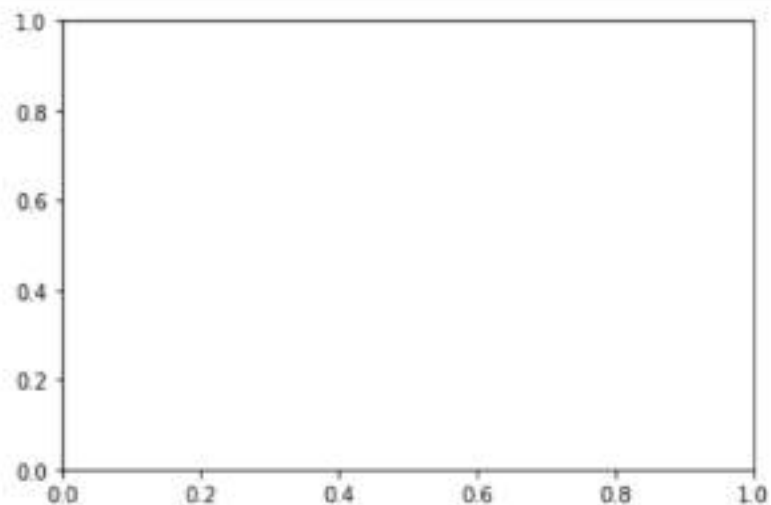

```
In [38]: tips = sns.load_dataset("tips")
```

```
In [48]: tips[:5]
```

```
Out[48]:
```

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

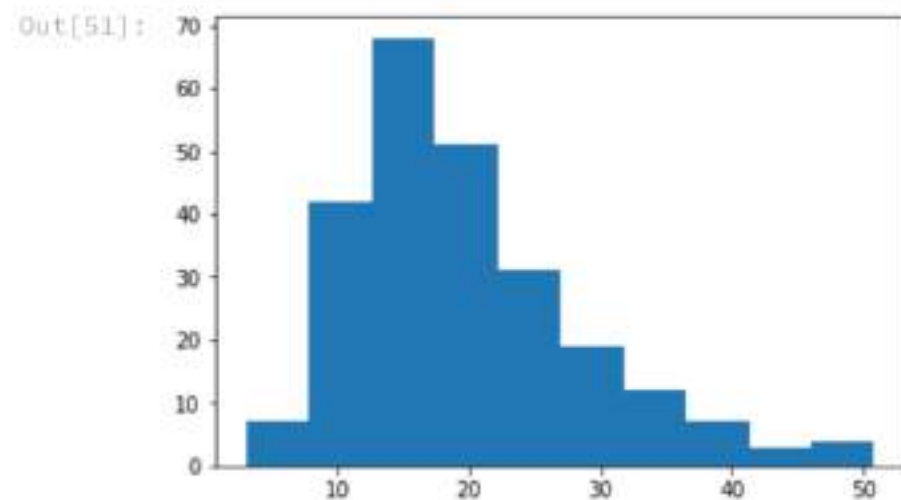
```
In [49]: fig2 = plt.figure()  
axes1 = fig2.add_subplot(1,1,1)
```



```
In [50]: axes1.hist(tips['total_bill'],bins=10)
```

```
Out[50]: (array([ 7., 42., 68., 51., 31., 19., 12.,  7.,  3.,  4.]),  
         array([ 3.07 ,  7.844, 12.618, 17.392, 22.166, 26.94 , 31.714, 36.488,  
                41.262, 46.036, 50.81 ]),  
         <a list of 10 Patch objects>)
```

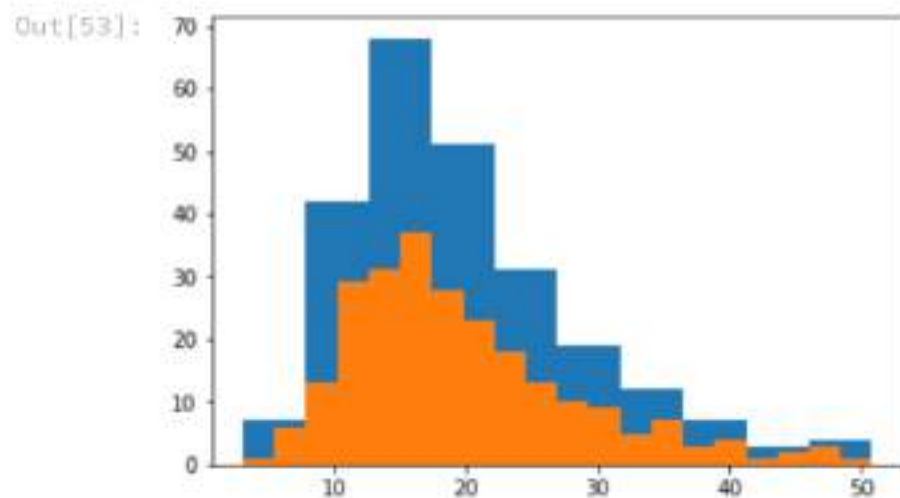
```
In [51]: fig2
```



```
In [52]: axes1.hist(tips['total_bill'],bins=20)
```

```
Out[52]: (array([ 1.,  6., 13., 29., 31., 37., 28., 23., 18., 13., 10.,  9.,  5.,  
        7.,  3.,  4.,  1.,  2.,  3.,  1.]),  
array([ 3.07 ,  5.457,  7.844, 10.231, 12.618, 15.005, 17.392, 19.779,  
        22.166, 24.553, 26.94 , 29.327, 31.714, 34.101, 36.488, 38.875,  
        41.262, 43.649, 46.036, 48.423, 50.81 ]),  
<a list of 20 Patch objects>)
```

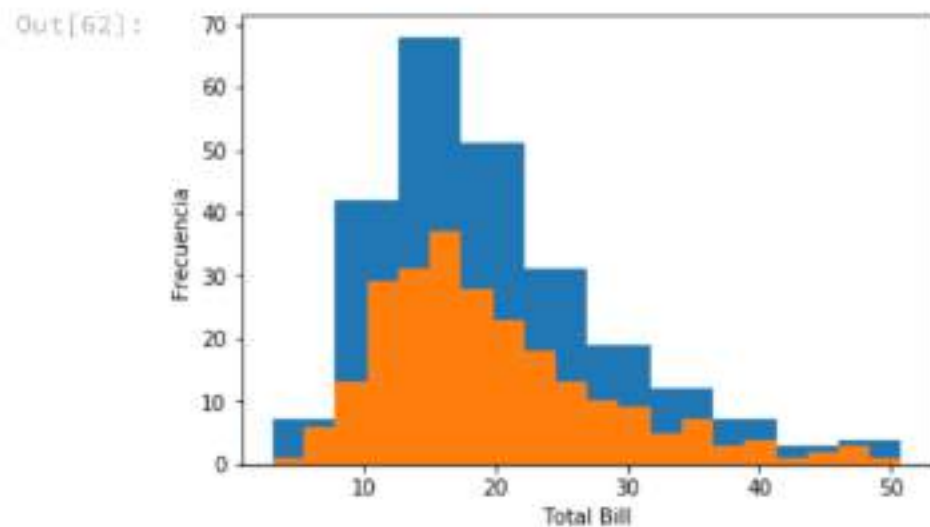
```
In [53]: fig2
```



```
In [61]: axes1.set_xlabel('Total Bill')  
axes1.set_ylabel('Frecuencia')
```

```
Out[61]: Text(17.2,0.5,'Frecuencia')
```

```
In [62]: fig2
```



```
In [63]: scatter_plt = plt.figure()
```

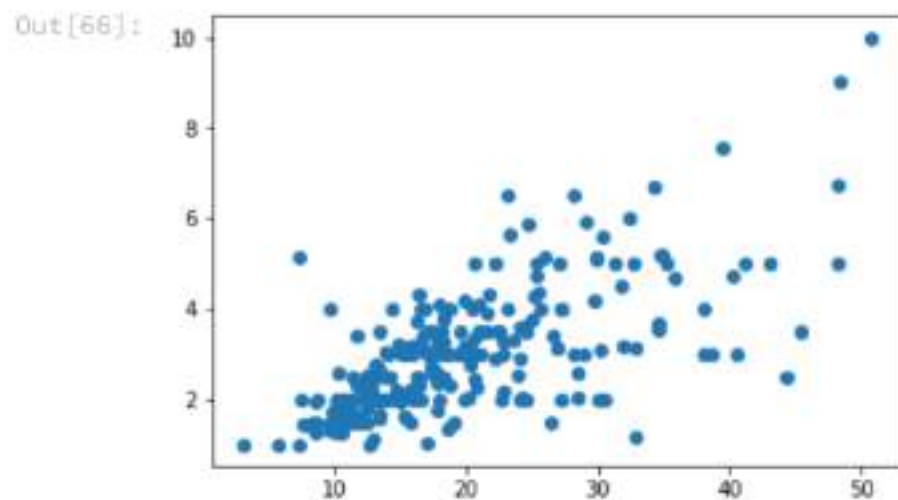
```
<Figure size 432x288 with 0 Axes>
```

```
In [64]: axes1 = scatter_plt.add_subplot(1,1,1)
```

```
In [65]: axes1.scatter(tips['total_bill'],tips['tip'])
```

```
Out[65]: <matplotlib.collections.PathCollection at 0x1a20c17c18>
```

```
In [66]: scatter_plt
```

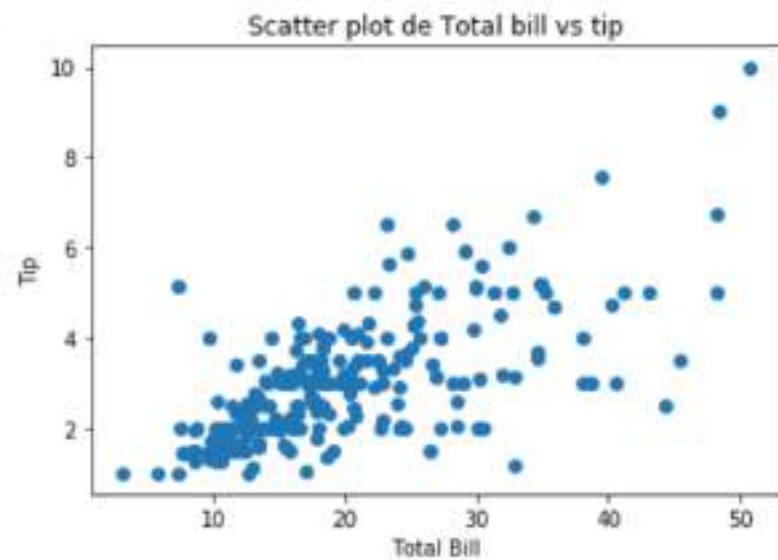


```
In [67]: axes1.set_title('Scatter plot de Total bill vs tip')
axes1.set_xlabel('Total Bill')
axes1.set_ylabel('Tip')
```

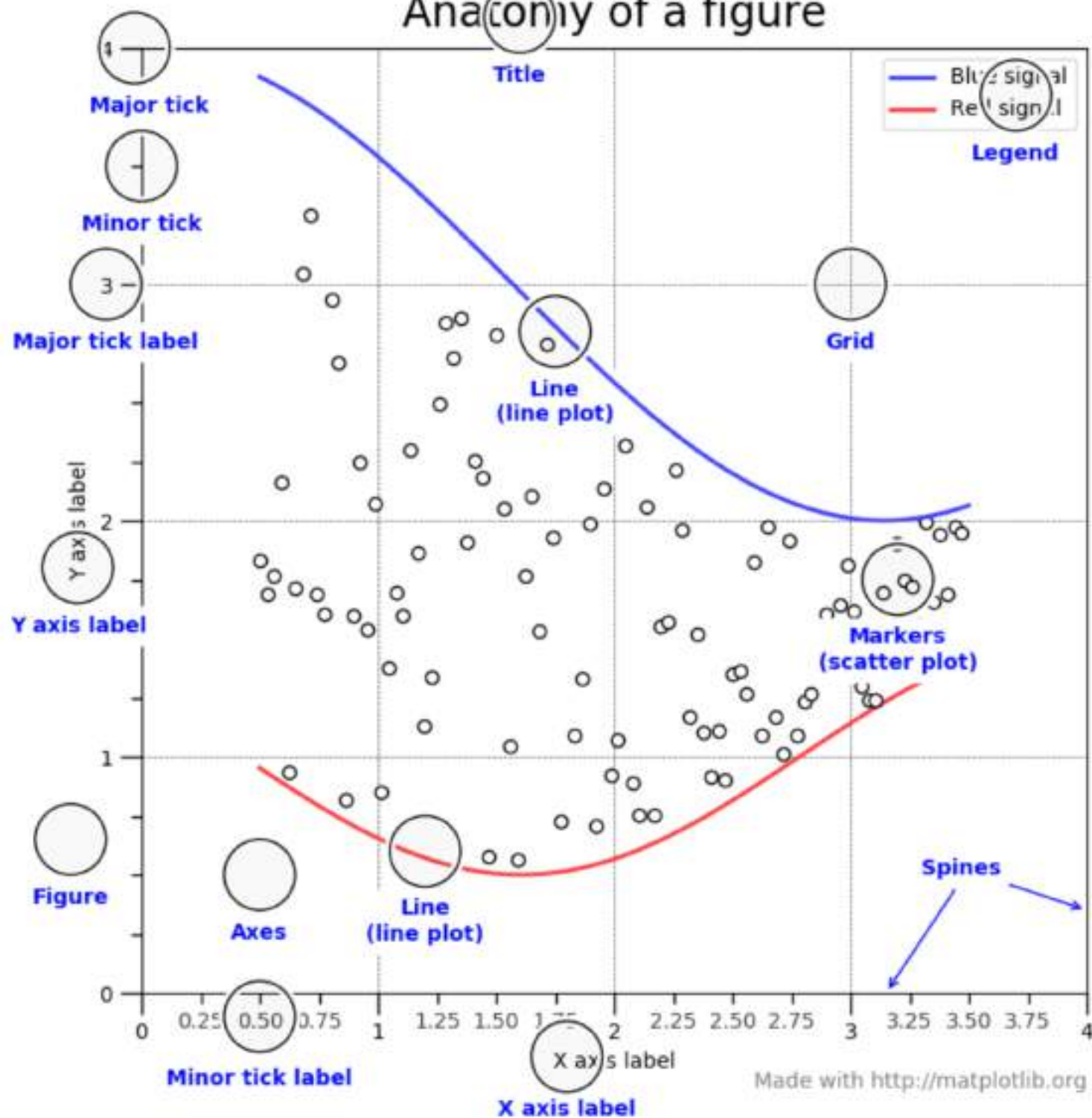
```
Out[67]: Text(3.2,0.5,'Tip')
```

```
In [68]: scatter_plt
```

```
Out[68]:
```



Anatomy of a figure



```
In [69]: boxplot = plt.figure()
```

<Figure size 432x288 with 0 Axes>

```
In [70]: axes1 = boxplot.add_subplot(1,1,1)
```

```
In [74]: tips[tips['sex']=='Female'][:5]
```

```
Out[74]:
```

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
11	35.26	5.00	Female	No	Sun	Dinner	4
14	14.83	3.02	Female	No	Sun	Dinner	2
16	10.33	1.67	Female	No	Sun	Dinner	3

```
In [76]: tips[tips['sex']=='Female']['tip'][:5]
```

```
Out[76]:
```

0	1.01
4	3.61
11	5.00
14	3.02
16	1.67

Name: tip, dtype: float64

```
In [77]: tips[tips['sex']=='Male']['tip'][:5]
```

```
Out[77]:
```

1	1.66
2	3.50
3	3.31
5	4.71
6	2.00

Name: tip, dtype: float64

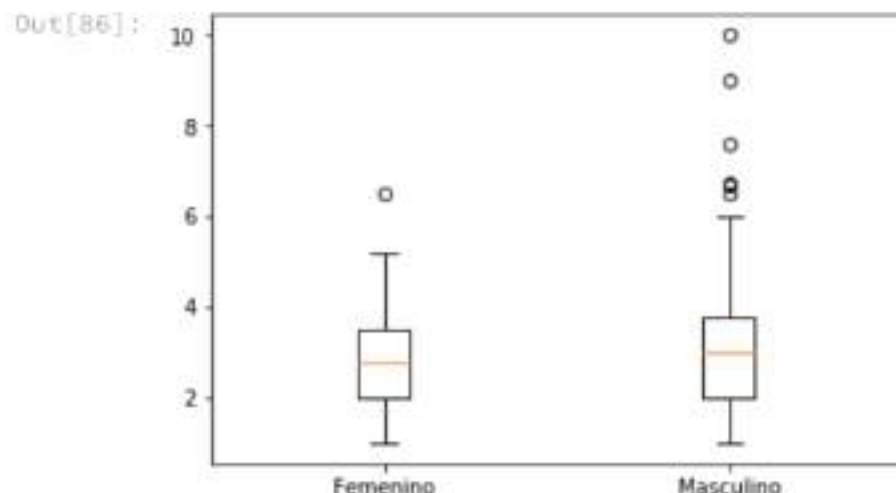
```
In [78]: subdata=[tips[tips['sex']=='Female']['tip'],tips[tips['sex']=='Male']['tip']]
```



```
In [85]: axes1.boxplot(subdata, labels=['Femenino', 'Masculino'])
```

```
Out[85]: {'whiskers': [<matplotlib.lines.Line2D at 0x1a20cb8ef0>,
  <matplotlib.lines.Line2D at 0x1a20d560b8>,
  <matplotlib.lines.Line2D at 0x1a20d5d9e8>,
  <matplotlib.lines.Line2D at 0x1a20d5de10>],
  'caps': [<matplotlib.lines.Line2D at 0x1a20d564e0>,
  <matplotlib.lines.Line2D at 0x1a20d56908>,
  <matplotlib.lines.Line2D at 0x1a20d66278>,
  <matplotlib.lines.Line2D at 0x1a20d666a0>],
  'boxes': [<matplotlib.lines.Line2D at 0x1a20cb8ac8>,
  <matplotlib.lines.Line2D at 0x1a20d5d588>],
  'medians': [<matplotlib.lines.Line2D at 0x1a20d56d30>,
  <matplotlib.lines.Line2D at 0x1a20d66ac8>],
  'fliers': [<matplotlib.lines.Line2D at 0x1a20d5d198>,
  <matplotlib.lines.Line2D at 0x1a20d66ef0>],
  'means': []}
```

```
In [86]: boxplot
```

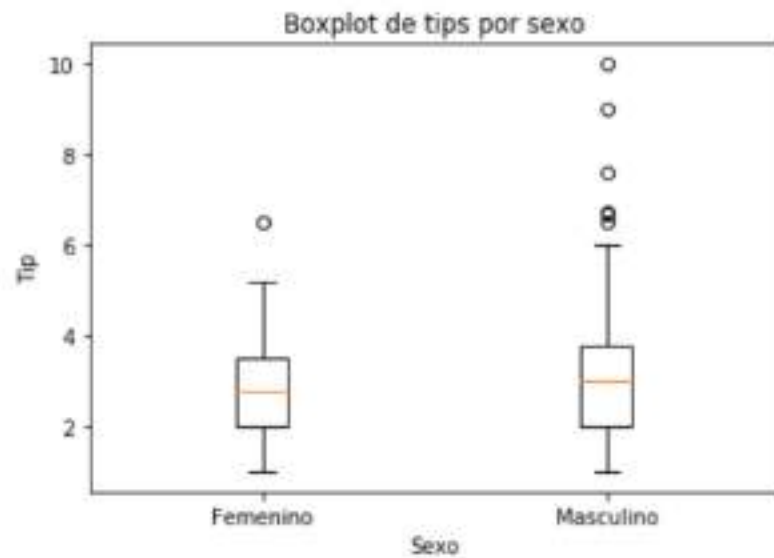


```
In [87]: axes1.set_xlabel('Sexo')  
axes1.set_ylabel('Tip')  
axes1.set_title('Boxplot de tips por sexo')
```

```
Out[87]: Text(0.5,1,'Boxplot de tips por sexo')
```

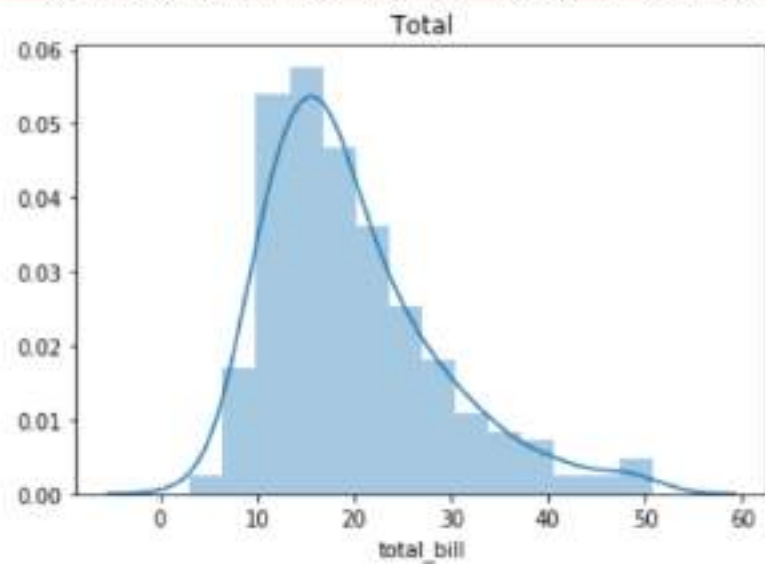
```
In [141]: boxplot
```

```
Out[141]:
```



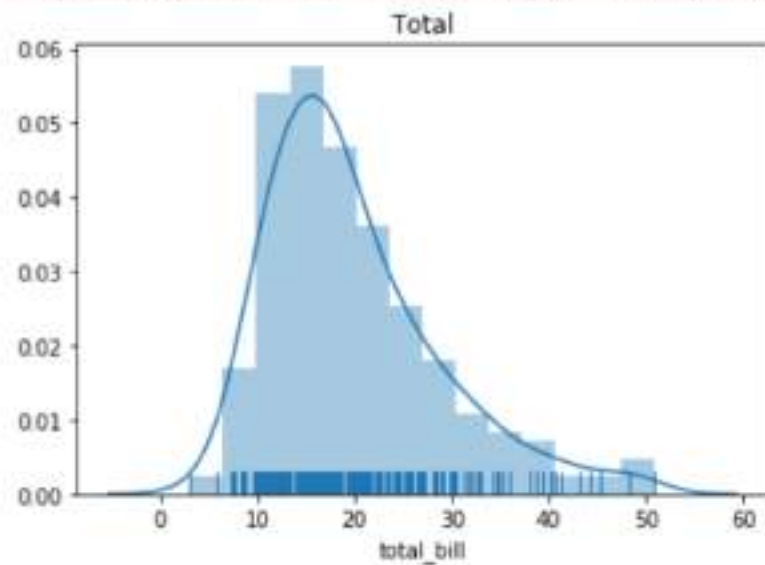
```
In [59]: hist, ax = plt.subplots()
ax = sns.distplot(tips['total_bill'])
ax.set_title('Total')
plt.show()
```

/anaconda3/lib/python3.6/site-packages/matplotlib/axes/_axes.py:6462: UserWarning: The 'normed' kwarg is deprecated, and has been replaced by the 'density' kwarg.
warnings.warn("The 'normed' kwarg is deprecated, and has been "



```
In [26]: hist, ax = plt.subplots()
ax = sns.distplot(tips['total_bill'], rug=True)
ax.set_title('Total')
plt.show()
```

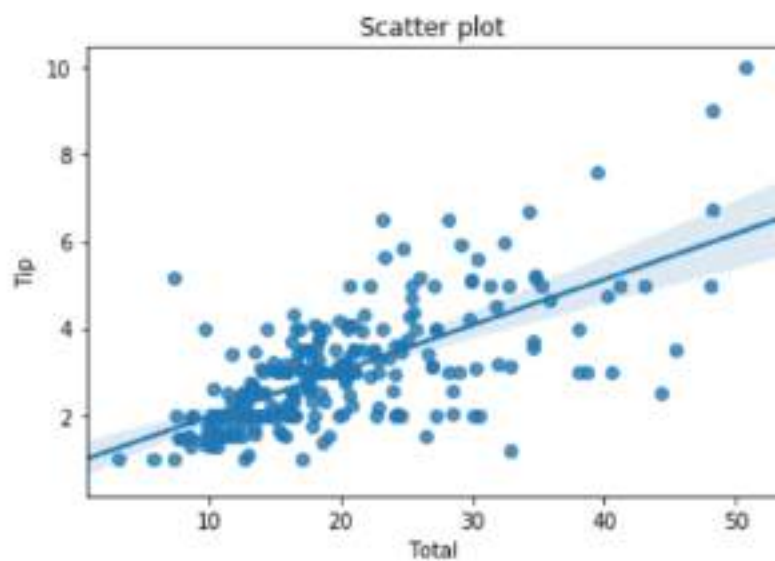
/anaconda3/lib/python3.6/site-packages/matplotlib/axes/_axes.py:6462: UserWarning: The 'normed' kwarg is deprecated, and has been replaced by the 'density' kwarg.
warnings.warn("The 'normed' kwarg is deprecated, and has been "



```
In [62]: count, ax = plt.subplots()
ax = sns.countplot('day', data=tips)
ax.set_title('Cuenta por día')
plt.show()
```



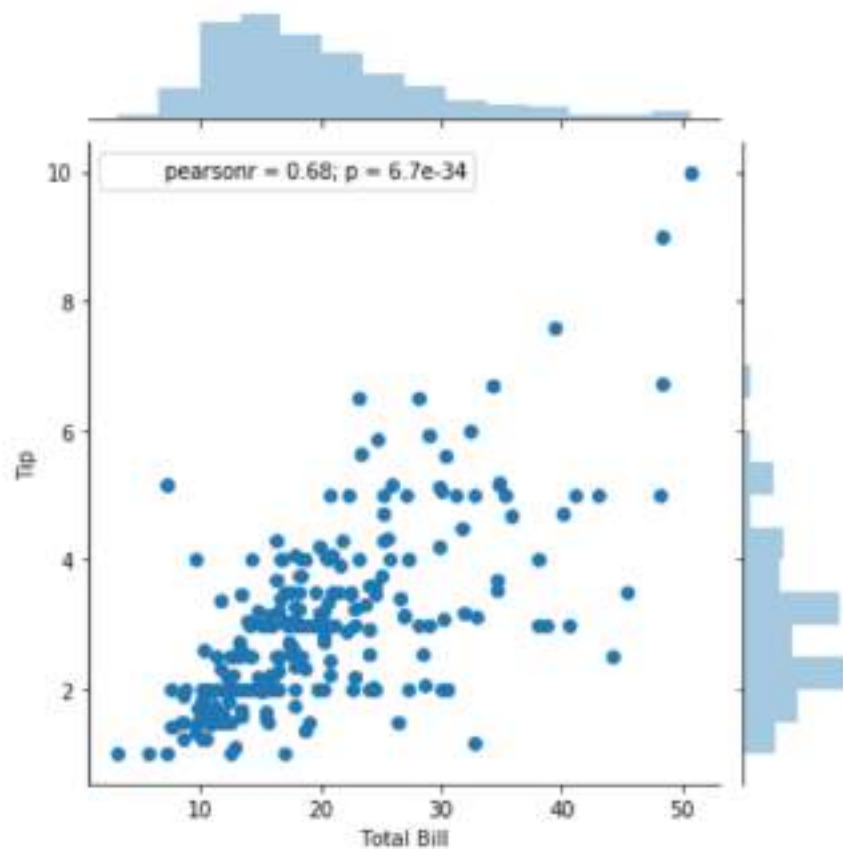
```
In [32]: scatter, ax = plt.subplots()
ax = sns.regplot(x='total_bill',y='tip',data=tips)
ax.set_title('Scatter plot')
ax.set_xlabel('Total')
ax.set_ylabel('Tip')
plt.show()
```



```
In [25]: joint = sns.jointplot(x='total_bill',y='tip',data=tips)
joint.set_axis_labels(xlabel='Total Bill',ylabel='Tip')
```

```
/anaconda3/lib/python3.6/site-packages/matplotlib/axes/_axes.py:6462: UserWarning: The 'normed' kwarg is deprecated, and has been replaced by the 'density' kwarg.
warnings.warn("The 'normed' kwarg is deprecated, and has been ")
/anaconda3/lib/python3.6/site-packages/matplotlib/axes/_axes.py:6462: UserWarning: The 'normed' kwarg is deprecated, and has been replaced by the 'density' kwarg.
warnings.warn("The 'normed' kwarg is deprecated, and has been ")
```

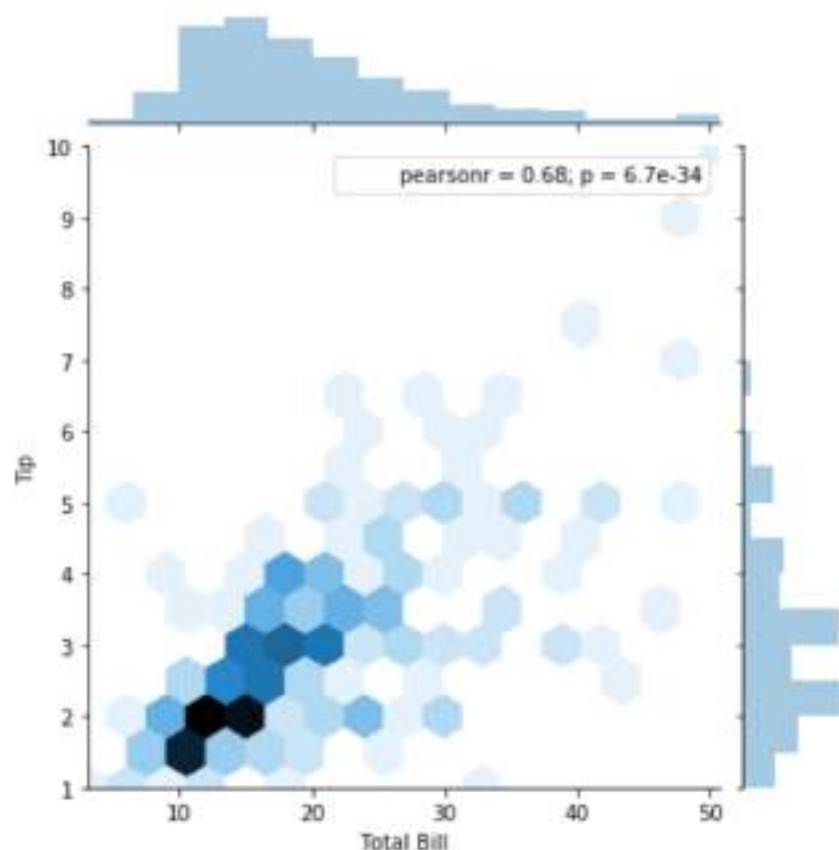
```
Out[25]: <seaborn.axisgrid.JointGrid at 0x10c8376d8>
```



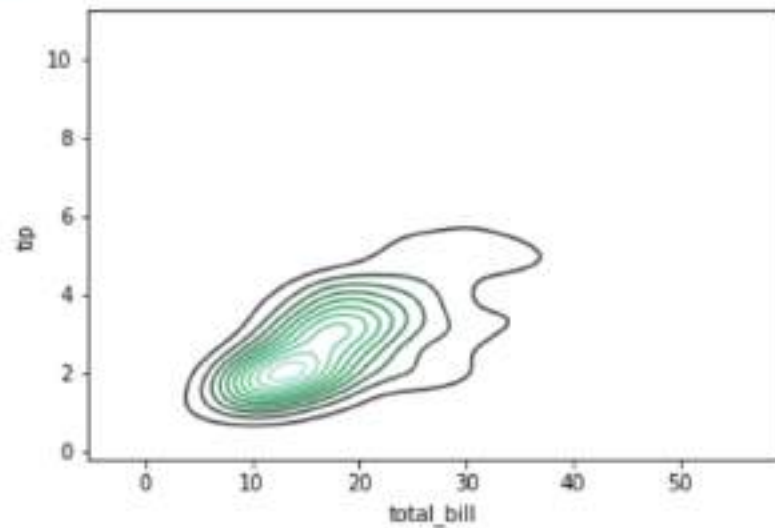
```
In [34]: hexbin = sns.jointplot(x='total_bill',y='tip',data=tips,kind='hex')
hexbin.set_axis_labels(xlabel='Total Bill',ylabel='Tip')
```

```
/anaconda3/lib/python3.6/site-packages/matplotlib/axes/_axes.py:6462: UserWarning: The 'normed' kwarg is deprecated, and has been replaced by the 'density' kwarg.
warnings.warn("The 'normed' kwarg is deprecated, and has been ")
/anaconda3/lib/python3.6/site-packages/matplotlib/axes/_axes.py:6462: UserWarning: The 'normed' kwarg is deprecated, and has been replaced by the 'density' kwarg.
warnings.warn("The 'normed' kwarg is deprecated, and has been ")
```

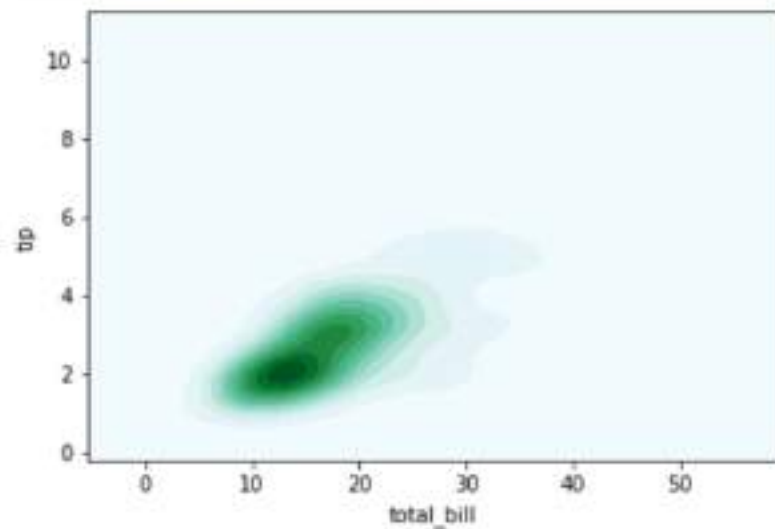
```
Out[34]: <seaborn.axisgrid.JointGrid at 0x10cb2fba8>
```



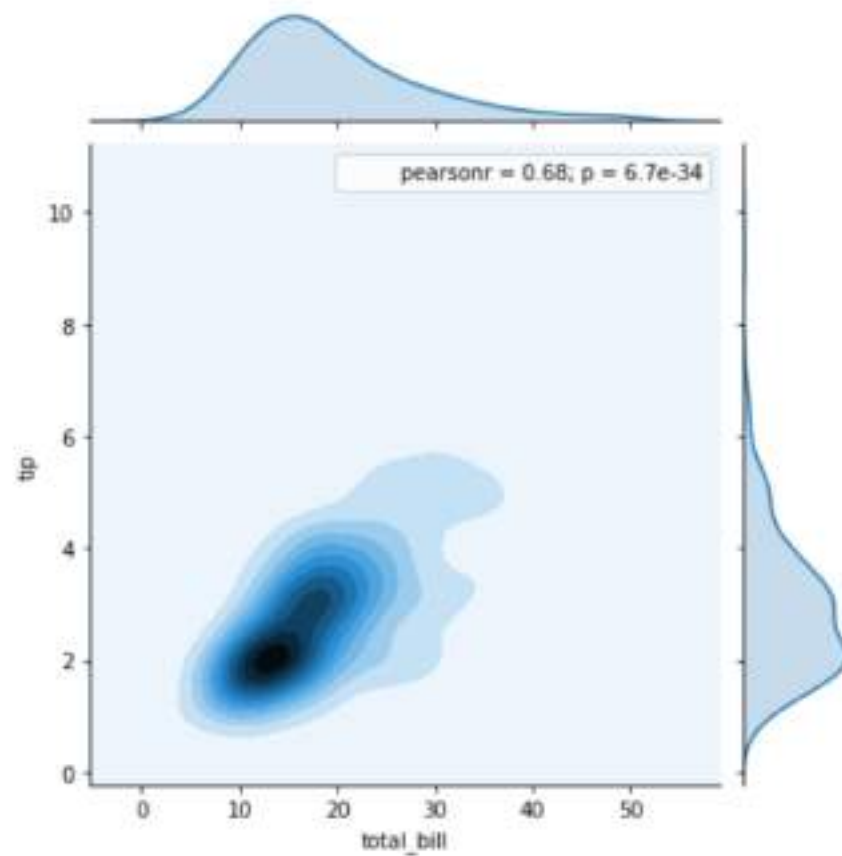

```
In [36]: kde, ax = plt.subplots()
ax=sns.kdeplot(data=tips['total_bill'],data2=tips['tip'])
```



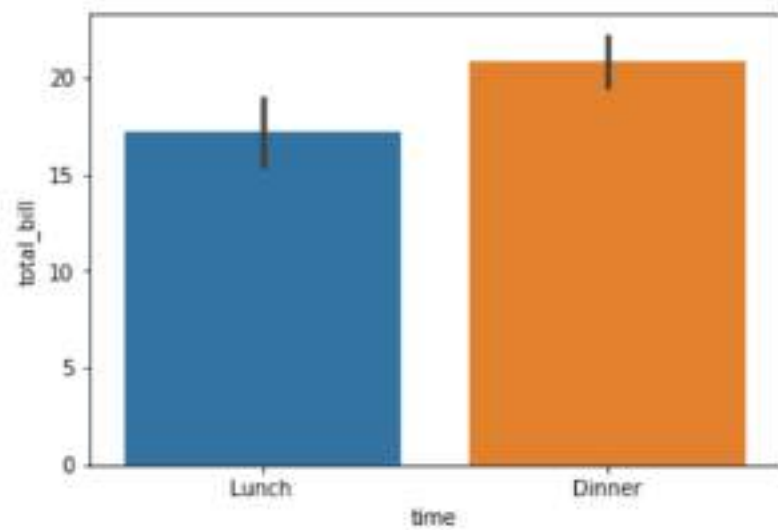
```
In [37]: kde, ax = plt.subplots()
ax=sns.kdeplot(data=tips['total_bill'],data2=tips['tip'],shade=True)
```



```
In [40]: kde_joint = sns.jointplot(x='total_bill',y='tip',data=tips,kind='kde')
```

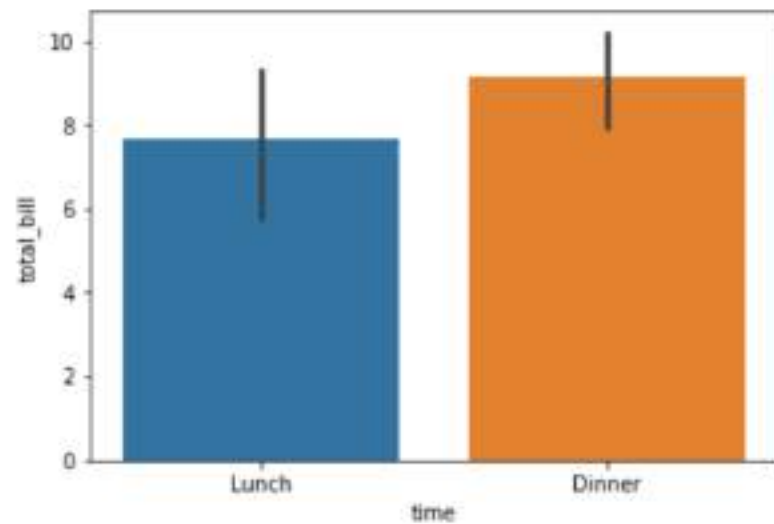


```
In [46]: bar, ax = plt.subplots()
ax = sns.barplot(x='time',y='total_bill',data=tips)
```

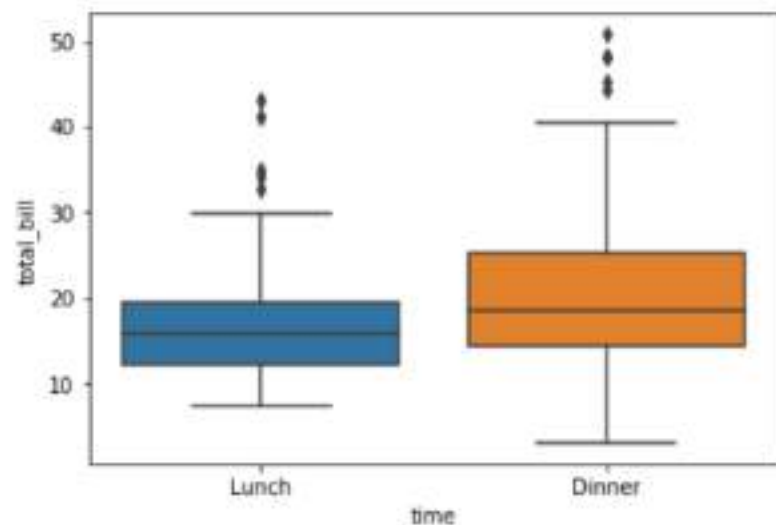


```
In [47]: import numpy
```

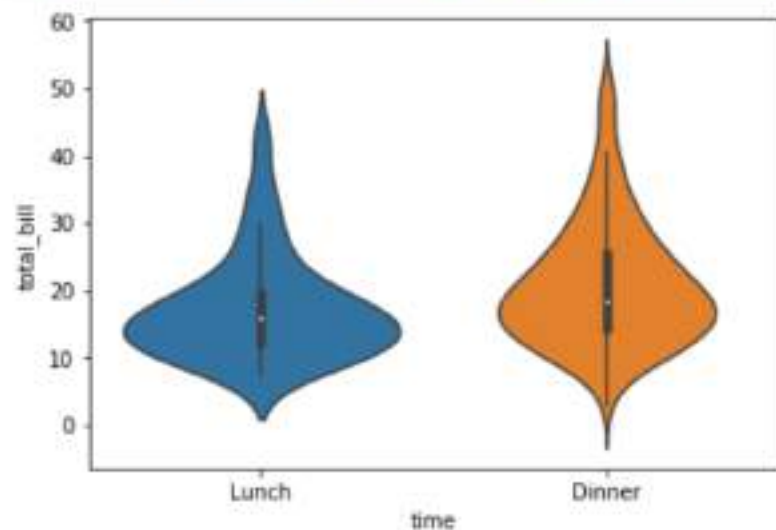
```
In [48]: bar, ax = plt.subplots()  
ax = sns.barplot(x='time', y='total_bill', data=tips, estimator=numpy.std)
```



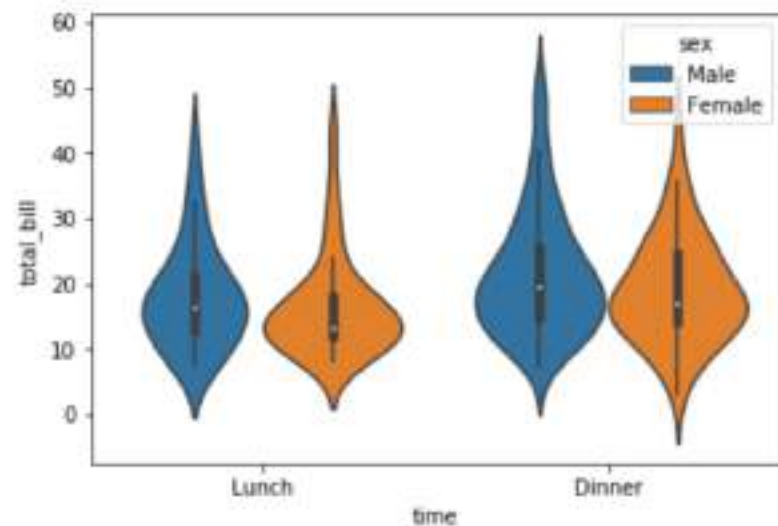
```
In [43]: box, ax = plt.subplots()
ax = sns.boxplot(x='time',y='total_bill',data=tips)
```



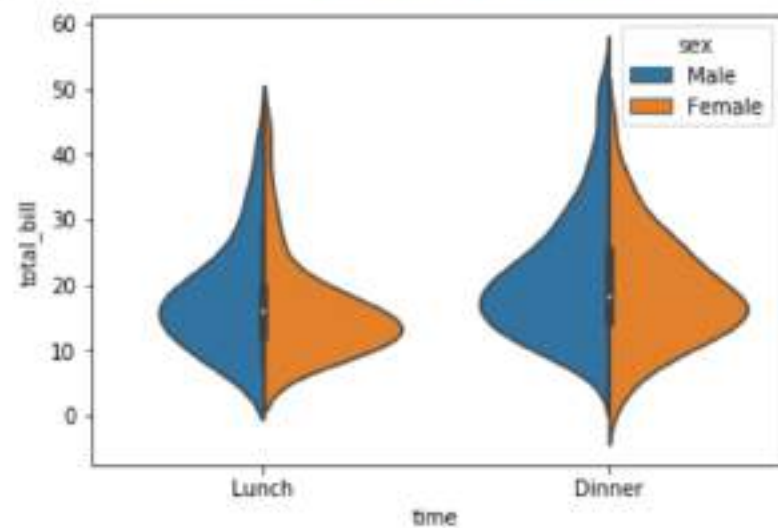
```
In [52]: violin, ax = plt.subplots()
ax = sns.violinplot(x='time',y='total_bill',data=tips)
```



```
In [54]: violin, ax = plt.subplots()
ax = sns.violinplot(x='time',y='total_bill',data=tips,hue='sex')
```



```
In [55]: violin, ax = plt.subplots()
ax = sns.violinplot(x='time',y='total_bill',data=tips,hue='sex',split=True)
```



```
In [50]: fig=sns.pairplot(tips)
```

