Link Github: https://github.com/paulbboone/DataMining_ThucHanh

LAB 03 In Class

In [2]:
```
# 1. Matplotlib
```

In [3]:
```
import matplotlib.pyplot as plt
```

In [4]:
```
%matplotlib inline
```

In [6]:
```
import numpy as np
x=np.linspace(0,5,11)
y=x**2
```

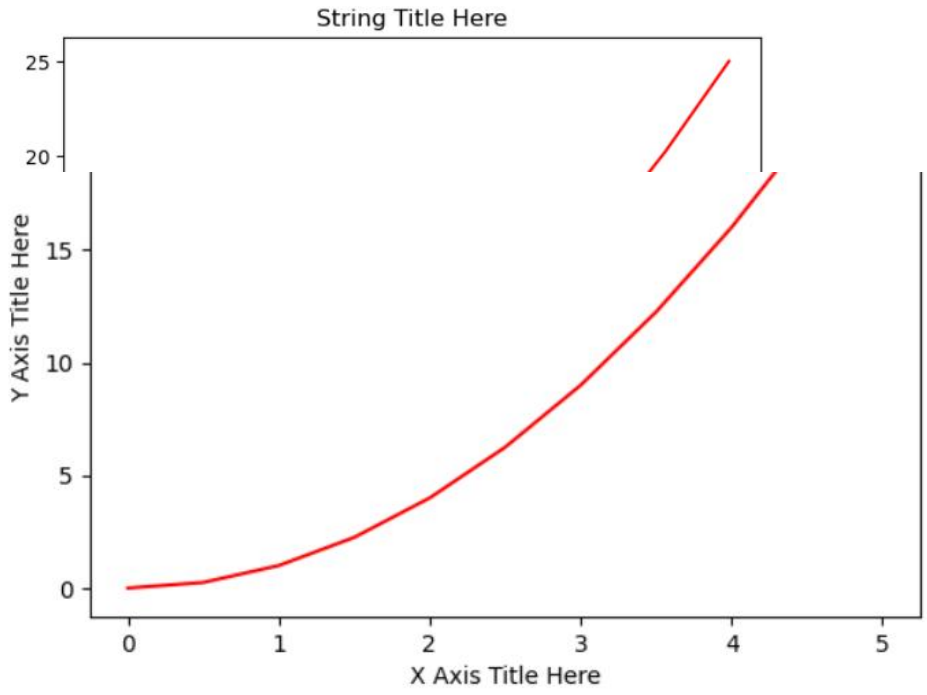
In [7]:
```
x
```

Out[7]:
```
array([0. , 0.5, 1. , 1.5, 2. , 2.5, 3. , 3.5, 4. , 4.5, 5. ])
```

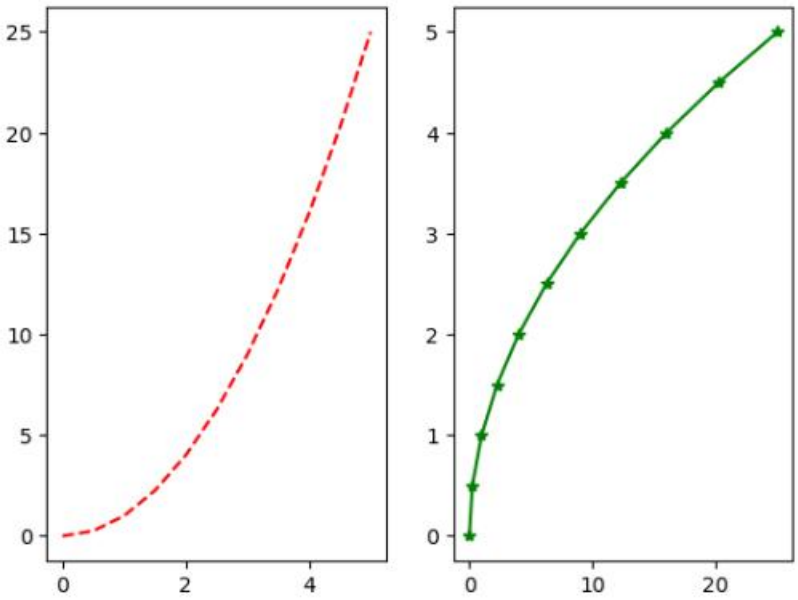
In [8]:
```
y
```

Out[8]:
```
array([ 0.  ,  0.25,  1.  ,  2.25,  4.  ,  6.25,  9.  , 12.25, 16.  ,
       20.25, 25.  ])
```

In [10]:
```
plt.plot(x,y,'r') # r: color red
plt.xlabel('X Axis Title Here')
plt.ylabel('Y Axis Title Here')
plt.title('String Title Here')
plt.show()
```

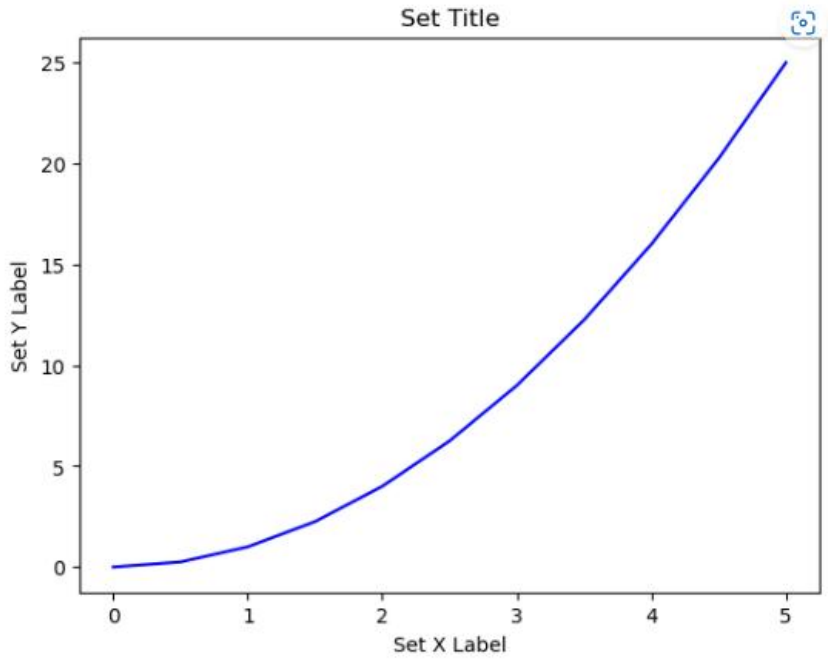


In [12]:
```
plt.subplot(1,2,1)
plt.plot(x,y,'r--')
plt.subplot(1,2,2)
plt.plot(y,x,'g*-');
```



In [17]:
```
fig=plt.figure()
axes=fig.add_axes([0.1, 0.1, 0.8, 0.8])

axes.plot(x,y,'b')
axes.set_xlabel('Set X Label')
axes.set_ylabel('Set Y Label')
axes.set_title('Set Title')
```

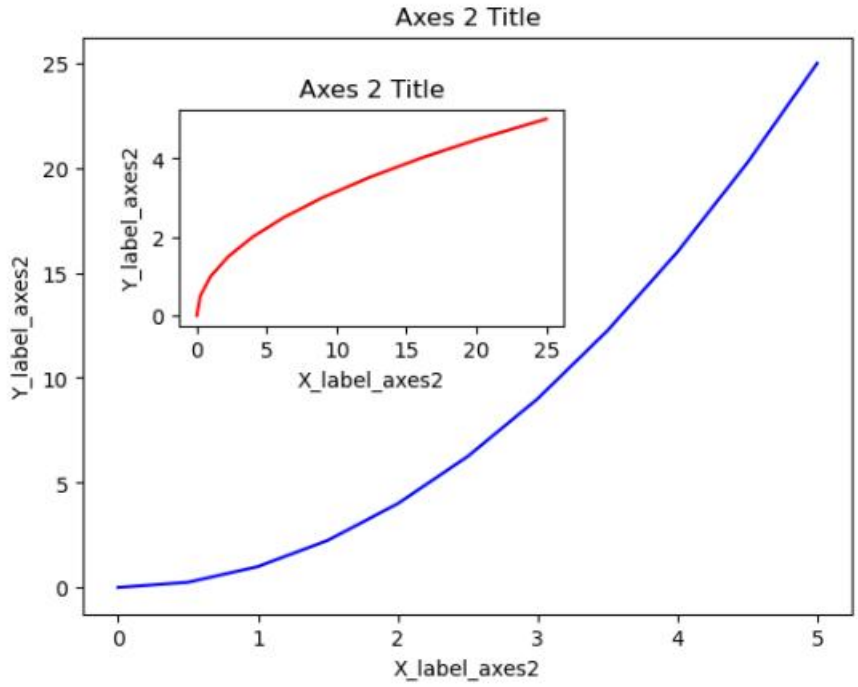
Out[17]: Text(0.5, 1.0, 'Set Title')



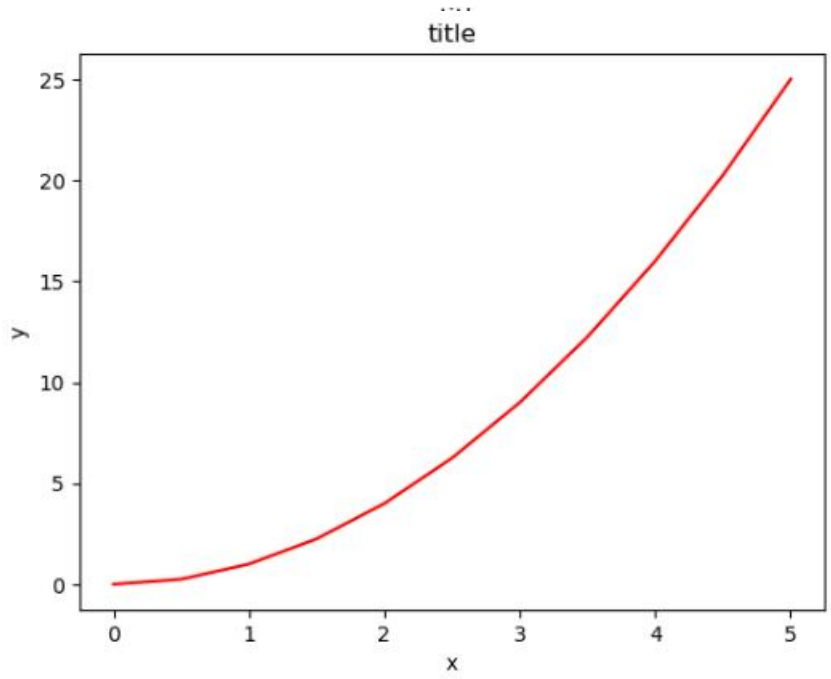
In [19]:
```
fig=plt.figure()
axes1=fig.add_axes([0.1, 0.1, 0.8, 0.8])
axes2=fig.add_axes([0.2, 0.5, 0.4, 0.3])

axes1.plot(x,y,'b')
axes1.set_xlabel('X_label_axes2')
axes1.set_ylabel('Y_label_axes2')
axes1.set_title('Axes 2 Title')

axes2.plot(y,x,'r')
axes2.set_xlabel('X_label_axes2')
axes2.set_ylabel('Y_label_axes2')
```

```
axes2.set_ylabel( 'Y_label_axes2' )
axes2.set_title('Axes 2 Title')
```

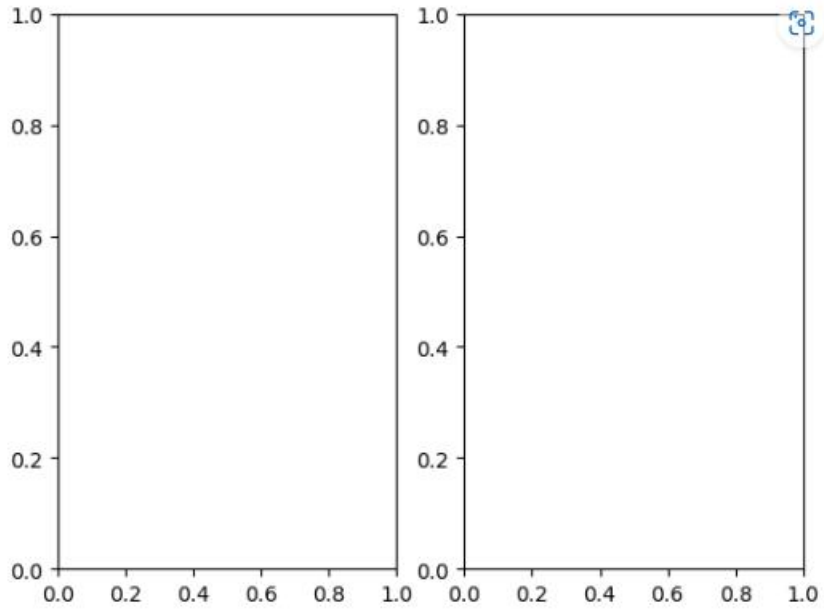
Out[19]: Text(0.5, 1.0, 'Axes 2 Title')



In [20]:
```
fig, axes =plt.subplots()
axes.plot(x,y,'r')
axes.set_xlabel('x')
axes.set_ylabel('y')
axes.set_title('title');
```



In [24]:
```
fig,axes= plt.subplots(nrows=1,ncols=2)
```

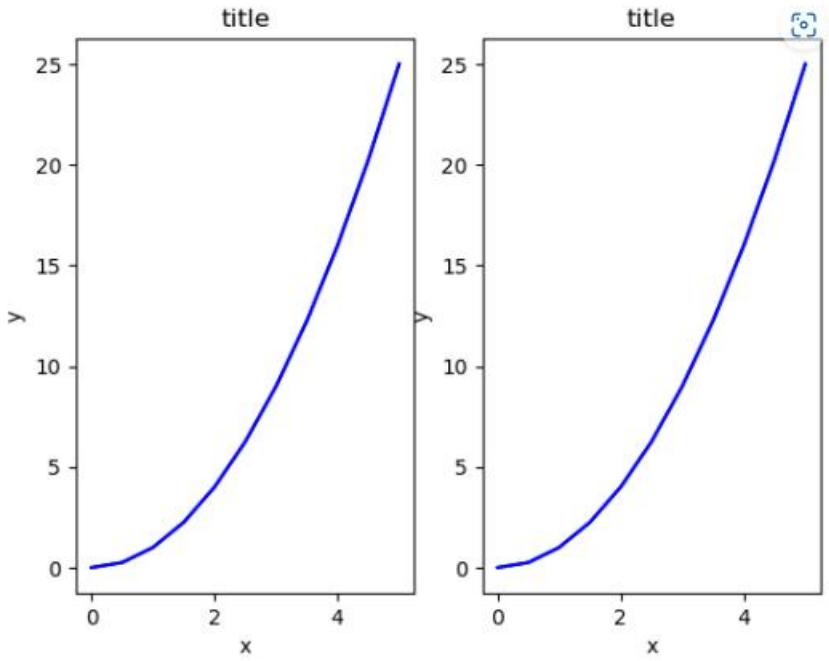


[25]:
```
axes
```

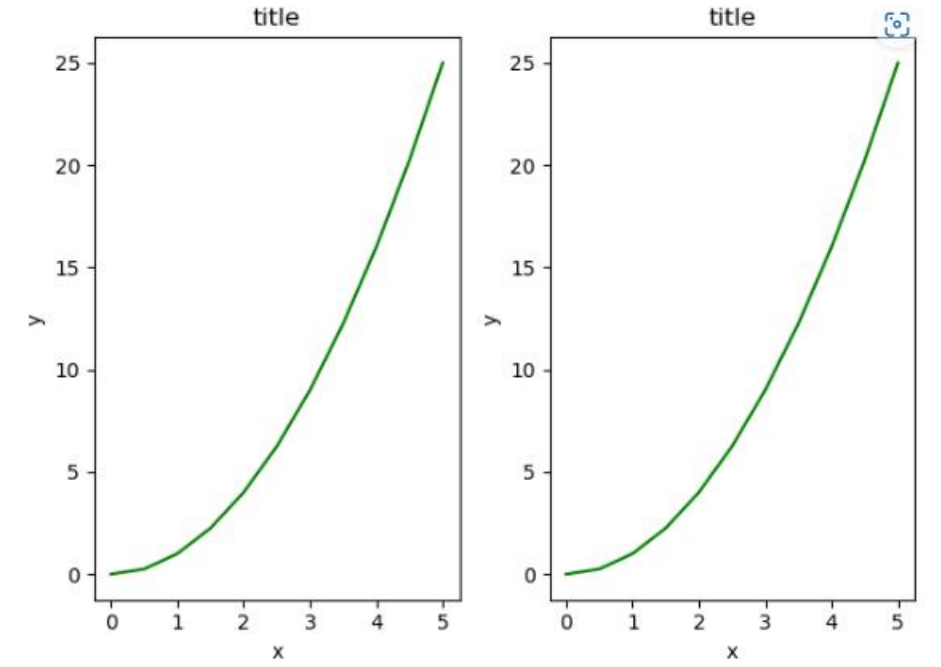
t[25]:
```
array([<AxesSubplot:>, <AxesSubplot:>], dtype=object)
```

[27]:
```
for ax in axes:
    ax.plot(x,y,'b')
    ax.set_xlabel('x')
    ax.set_ylabel('y')
    ax.set_title('title')

fig
```

Out[27]:



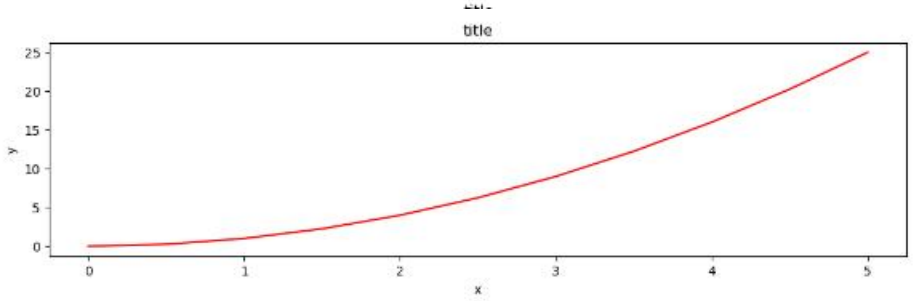
In [28]:
```
fig,axes= plt.subplots(nrows=1,ncols=2)

for ax in axes:
    ax.plot(x,y,'g')
    ax.set_xlabel('x')
    ax.set_ylabel('y')
    ax.set_title('title')

fig
plt.tight_layout()
```



In [29]:
```
fig= plt.figure(figsize=(8,4), dpi=100)
```

```
<Figure size 800x400 with 0 Axes>
```

In [32]:
```
fig,axes= plt.subplots(figsize=(12,3))

axes.plot(x,y,'r')
axes.set_xlabel('x')
axes.set_ylabel('y')
axes.set_title('title');
```



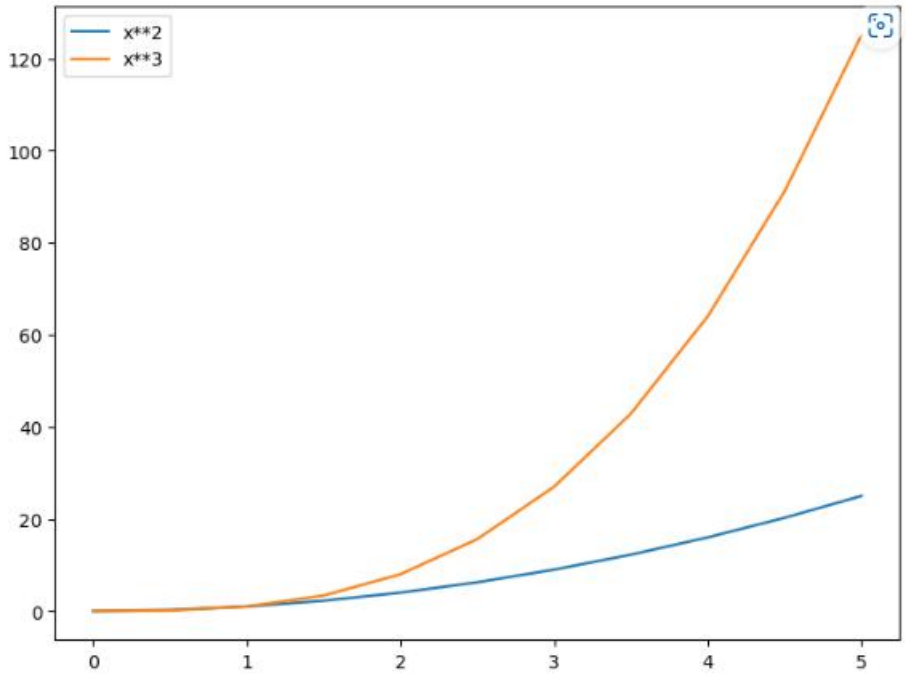
In [33]:
```
fig.savefig("filename.png")
```

In [34]:
```
fig.savefig("filename.png", dpi=200)
```

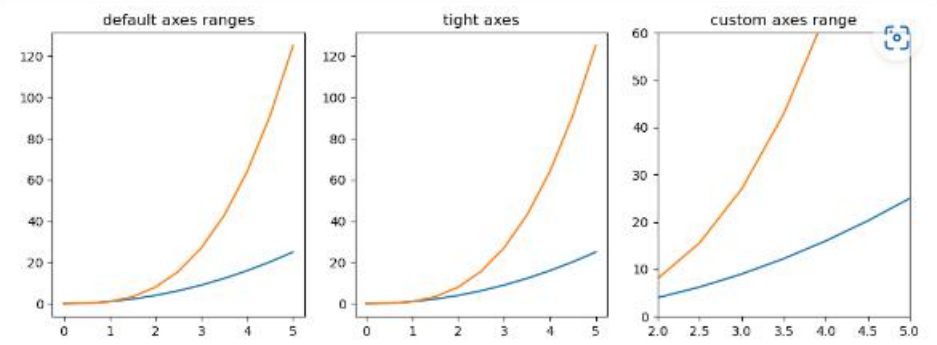
In [35]:
```
ax.set_xlabel("x")
ax.set_ylabel("y");
```

In [37]:
```
fig=plt.figure()

ax =fig.add_axes([0,0,1,1])

ax.plot(x,x**2, label="x**2")
ax.plot(x, x**3, label="x**3")
ax.legend()
```

Out[37]: <matplotlib.legend.Legend at 0x2249b4ec910>



In [38]:
```
fig, axes =plt.subplots(1,3, figsize=(12,4))

axes[0].plot(x, x**2, x, x**3)
axes[0].set_title("default axes ranges")

axes[1].plot(x, x**2, x, x**3)
axes[1].axis('tight')
axes[1].set_title("tight axes")

axes[2].plot(x, x**2, x, x**3)
axes[2].set_ylim([0,60])
axes[2].set_xlim([2,5])
axes[2].set_title("custom axes range");
```



In [ ]:

In [39]:
```
# 2. Seaborn
```

In [40]:
```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
import seaborn as sns
%matplotlib inline

sns.get_dataset_names()
```

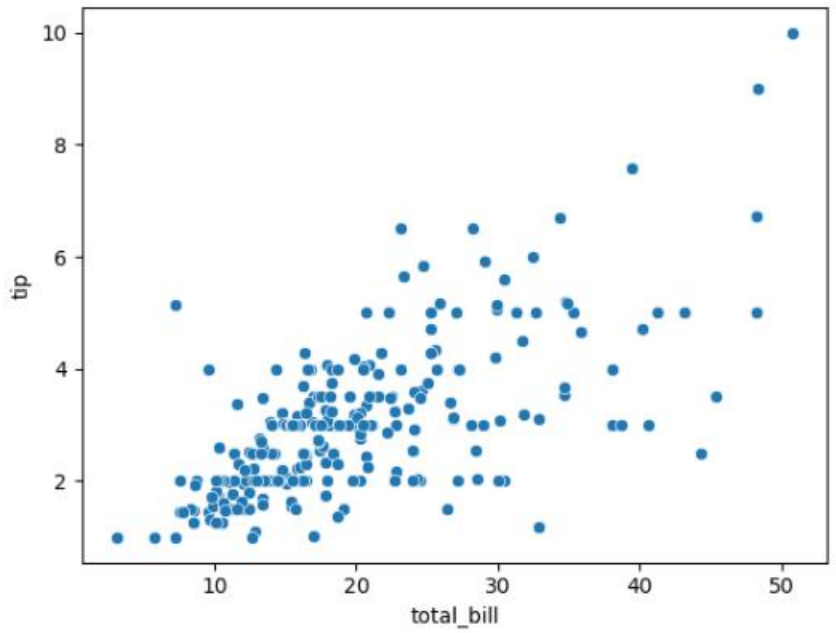
Out[40]:
```
['anagrams',
 'anscombe',
 'attention',
 'brain_networks',
 'car_crashes',
 'diamonds',
 'dots',
 'dowjones',
 'exercise',
 'flights',
 'fmri',
 'geyser',
 'glue',
 'healthexp',
 'iris',
 'mpg',
 'penguins',
 'planets',
 'seaice',
```

In [41]:
```
tips =sns.load_dataset("tips")
tips.head()
```

Out[41]:

	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

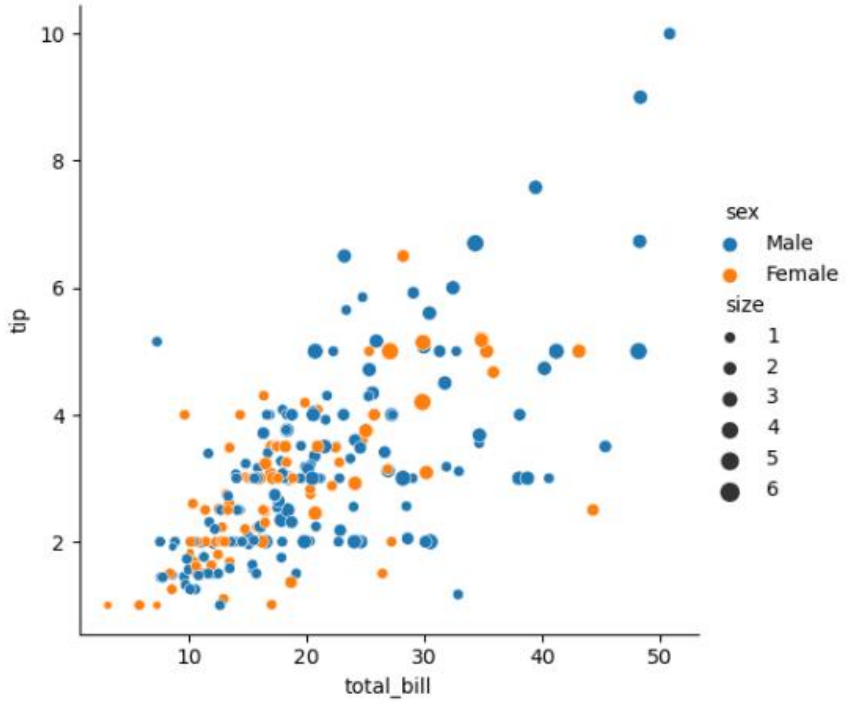
In [42]:
```
ax= sns.scatterplot(x="total_bill", y="tip",data=tips)
```



In [43]:
```
sns.relplot(x="total_bill", y="tip",data=tips, kind="scatter", hue="sex", size="
```

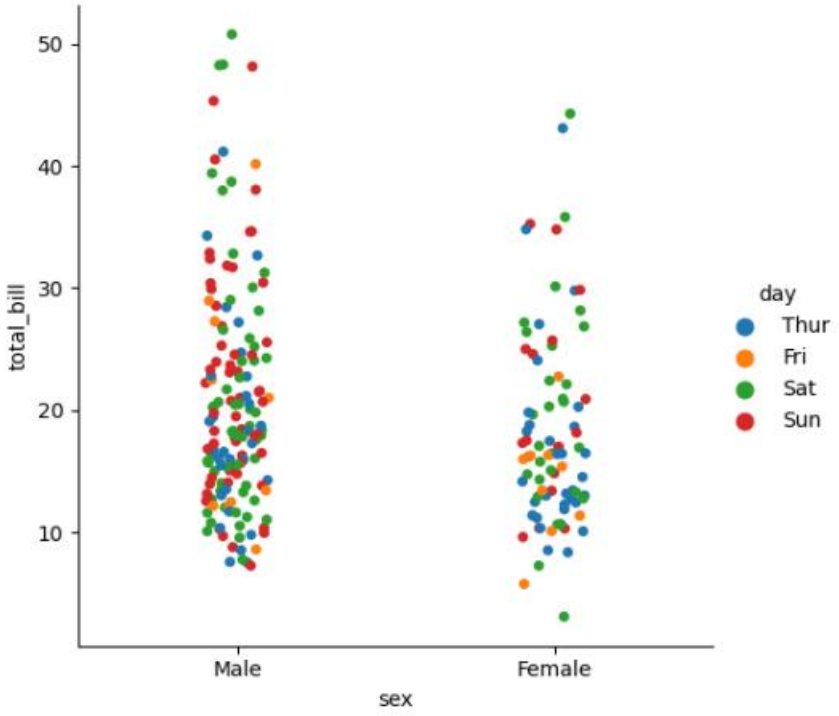
Out[43]: <seaborn.axisgrid.FacetGrid at 0x2249e085e60>

Out[43]: <seaborn.axisgrid.FacetGrid at 0x2249e985a60>



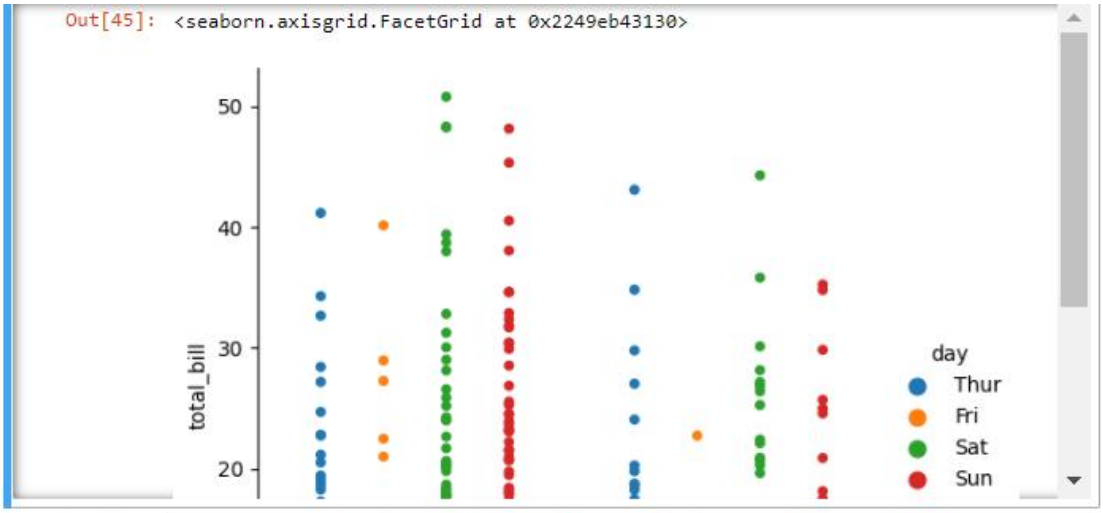
In [44]:
```
sns.catplot(x="sex", y="total_bill", hue="day", data=tips, kind="strip")
```

Out[44]: <seaborn.axisgrid.FacetGrid at 0x2249ae928b0>



In [45]:
```
sns.catplot(x="sex", y="total_bill", hue="day", data=tips, kind="strip", jitter=
```

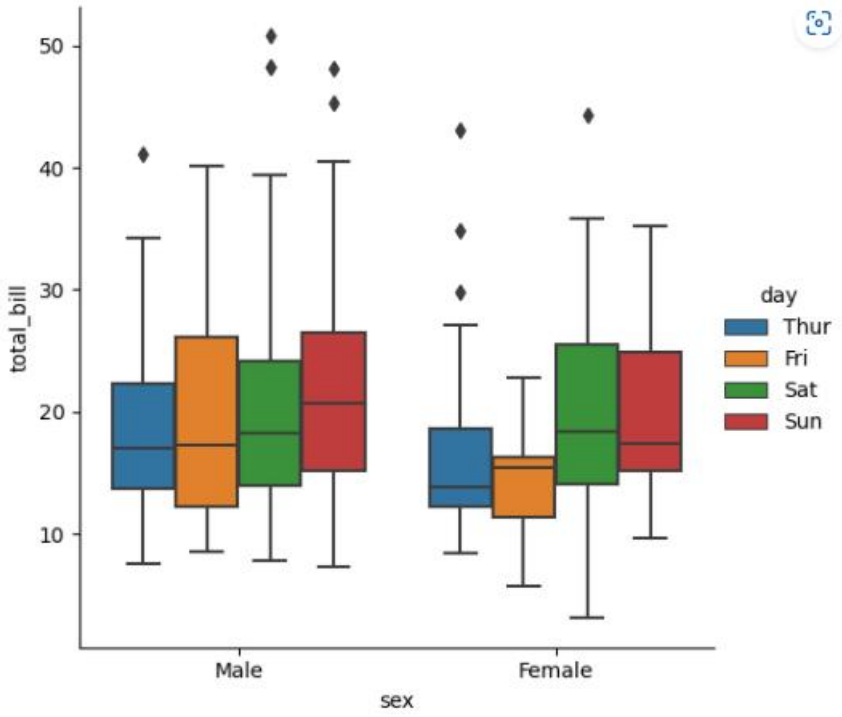
Out[45]: <seaborn.axisgrid.FacetGrid at 0x2249eb43130>



In [46]:
```
sns.catplot(x="sex", y="total_bill", hue="day", data=tips, kind="box")
```

Out[46]: <seaborn.axisgrid.FacetGrid at 0x2249eadc1f0>

```
In [46]: sns.catplot(x="sex", y="total_bill", hue="day", data=tips, kind="box")
Out[46]: <seaborn.axisgrid.FacetGrid at 0x2249eadc1f0>
```




```
In [46]: sns.catplot(x="sex", y="total_bill", hue="day", data=tips, kind="box")
Out[46]: <seaborn.axisgrid.FacetGrid at 0x2249eadc1f0>
```

```
Out[46]: <seaborn.axisgrid.FacetGrid at 0x2249eadc1f0>
```