

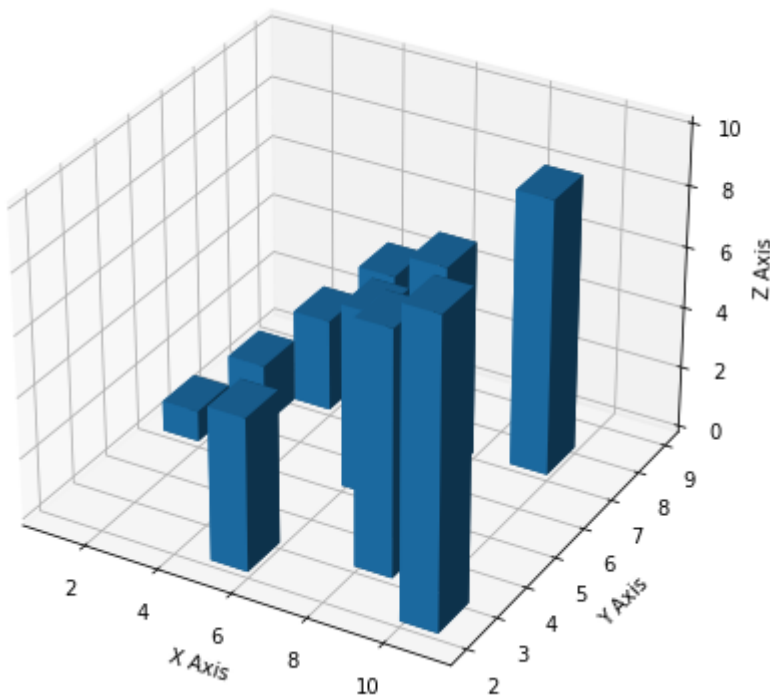
In [44]:

```

1  from mpl_toolkits.mplot3d import axes3d
2  fig = plt.figure()
3  fig = plt.figure(figsize=(10,7))
4  ax = fig.add_subplot(111,projection='3d')
5  x = [1,2,3,4,5,6,7,8,9,10]
6  y = [5,6,7,8,2,5,6,3,7,2]
7  z = np.zeros(10)
8  dx = np.ones(10)
9  dy = np.ones(10)
10 dz = [1,2,3,4,5,6,7,8,9,10]
11
12 ax.bar3d(x,y,z,dx,dy,dz)
13 ax.set_xlabel('X Axis')
14 ax.set_ylabel('Y Axis')
15 ax.set_zlabel('Z Axis')
16 plt.show()

```

<Figure size 432x288 with 0 Axes>



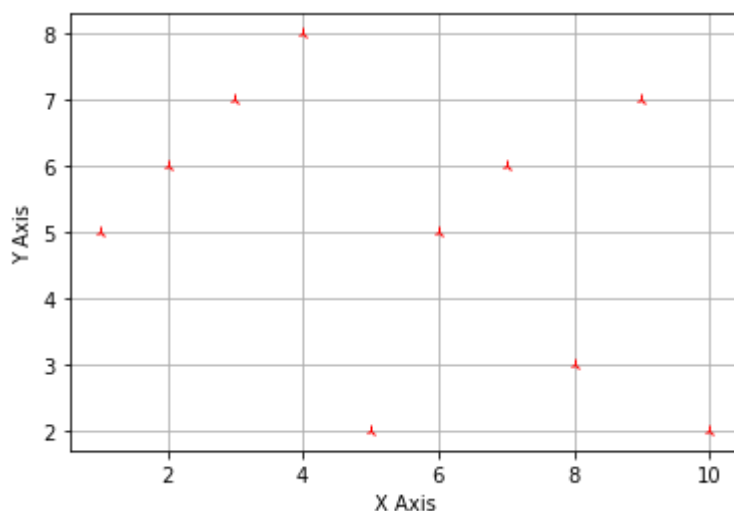
In []:

1

adding a grid

In [50]:

```
1 plt.plot(x,y,'r2')
2 plt.xlabel("X Axis")
3 plt.ylabel("Y Axis")
4 plt.grid(True)
```



In []:

1

Seaborn

pip install seaborn

In [52]:

```
1 import pandas as pd
2 import numpy as np
3 import matplotlib.pyplot as plt
4 import seaborn as sb
```

In []:

1

In [53]:

```
1 df = sb.load_dataset('tips')
```

In [54]:

```
1 df
```

Out[54]:

	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
...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

244 rows × 7 columns

In [55]:

```
1 print(sb.get_dataset_names())
```

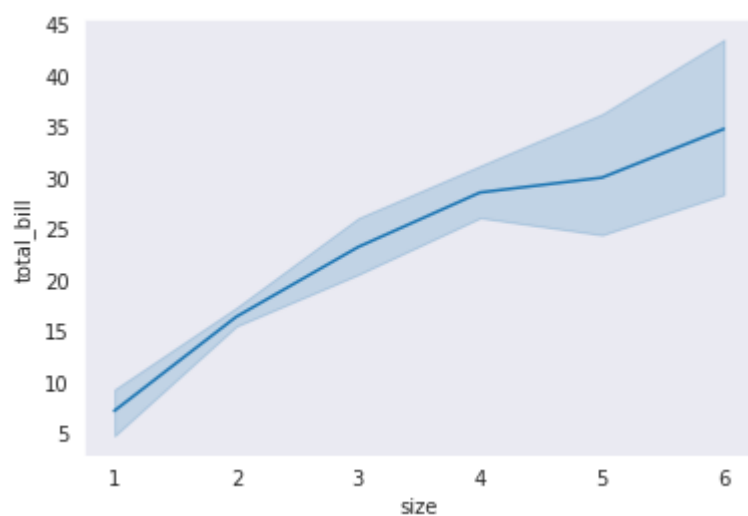
```
['anagrams', 'anscombe', 'attention', 'brain_networks', 'car_crashes',  
'diamonds', 'dots', 'exercise', 'flights', 'fmri', 'gammas', 'geyser',  
'iris', 'mpg', 'penguins', 'planets', 'tips', 'titanic']
```

In []:

```
1
```

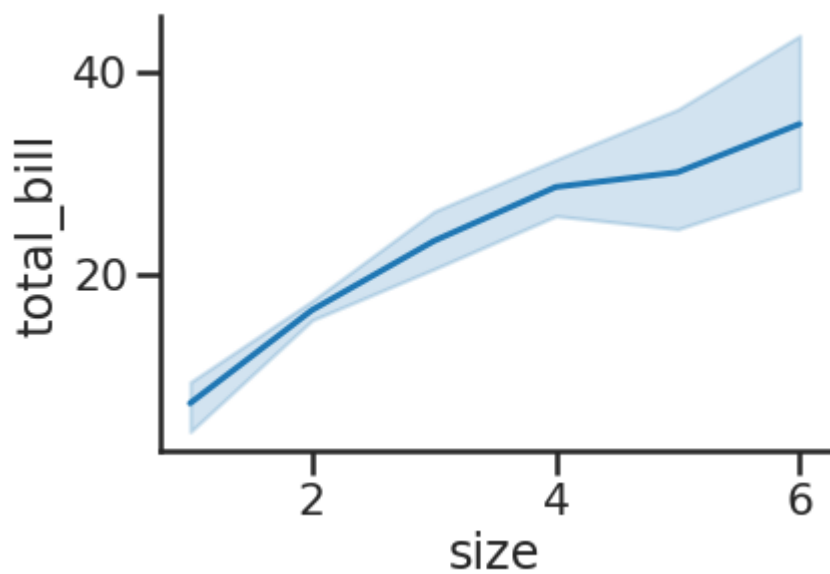
In [61]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("darkgrid")
```



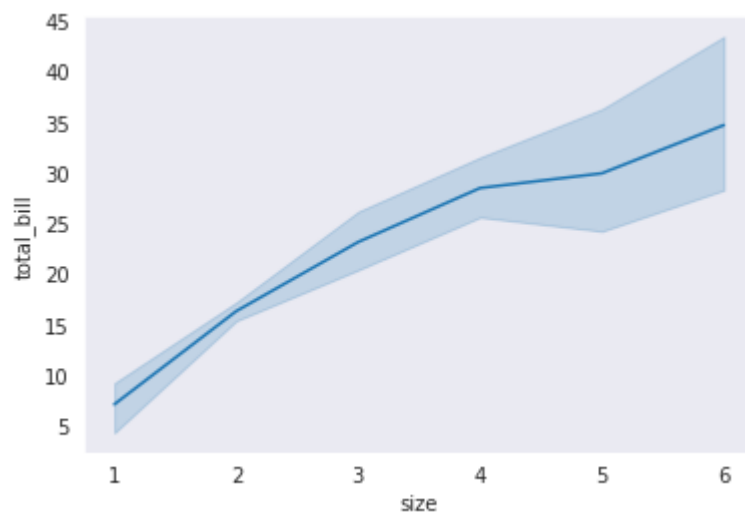
In [80]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("dark")
3 sb.despine()
```



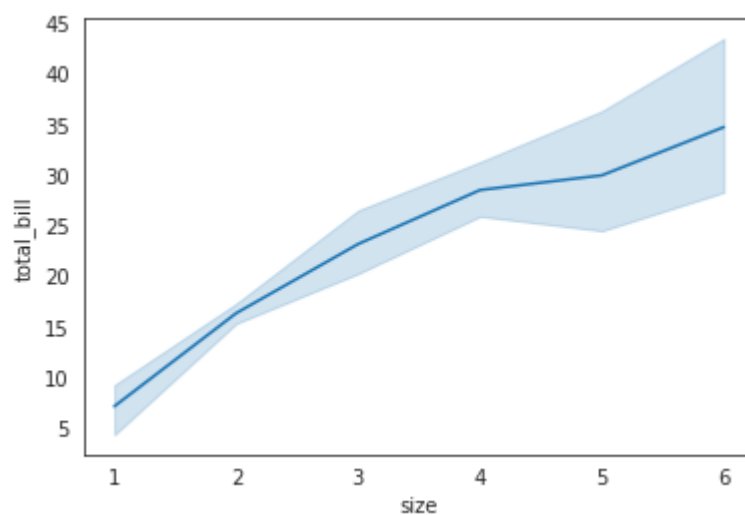
In [63]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("white")
```



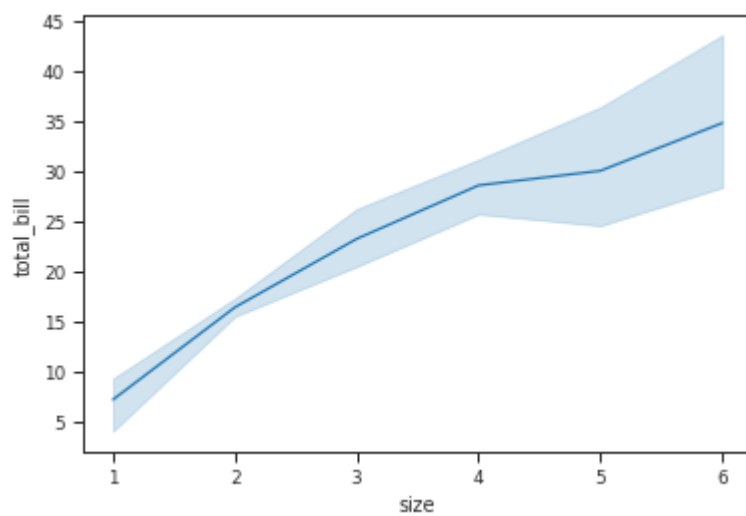
In [64]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("whitegrid")
```



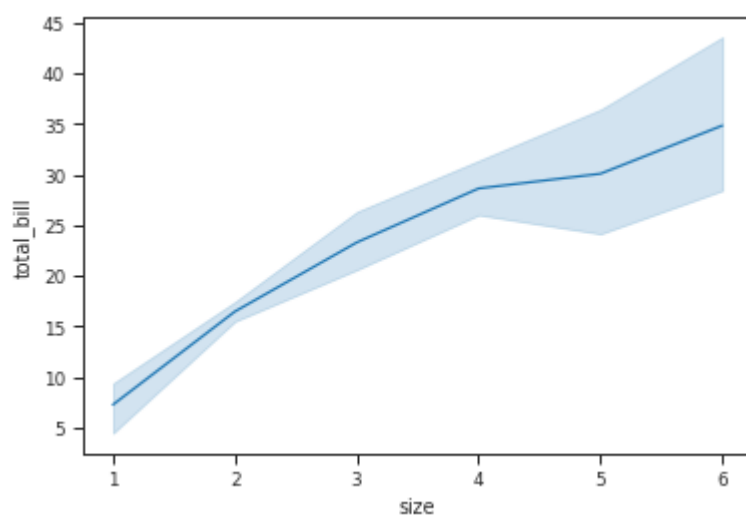
In [75]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("ticks")
3 sb.set_context("paper")
```



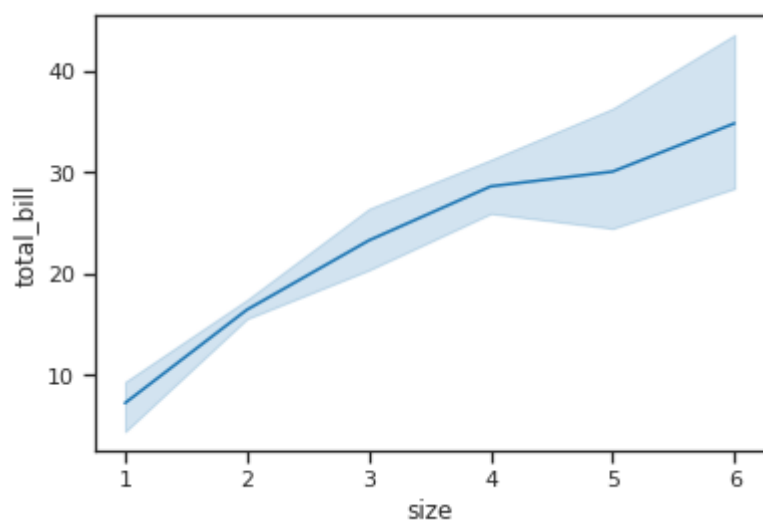
In [76]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("ticks")
3 sb.set_context("notebook")
```



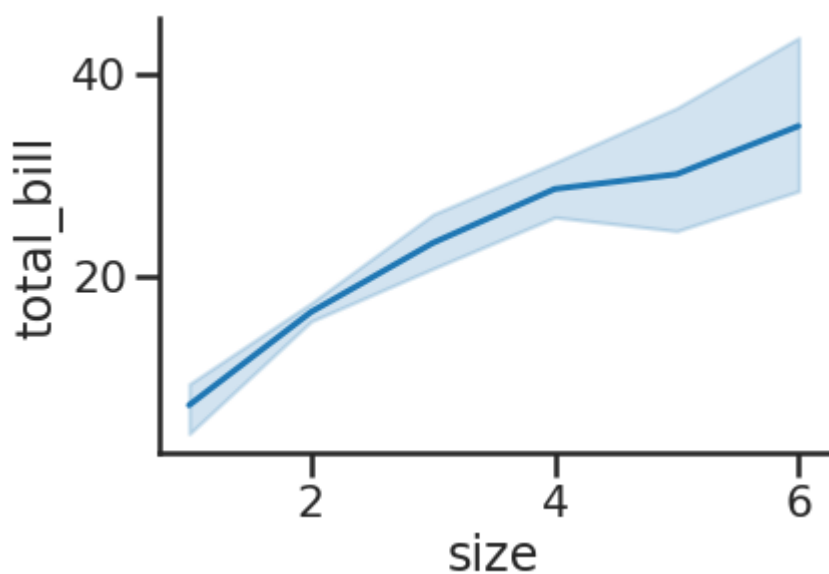
In [77]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("ticks")
3 sb.set_context("talk")
```



In [79]:

```
1 sb.lineplot(x="size",y="total_bill",data=df)
2 sb.set_style("ticks")
3 sb.set_context("poster")
4 sb.despine()
```



In []:

```
1
```

color pallet

In [81]:

```
1 colors = sb.color_palette()  
2 colors
```

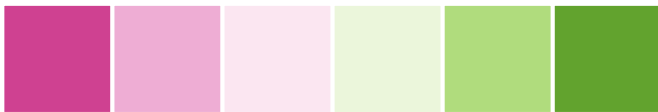
Out[81]:



In [82]:

```
1 sb.color_palette('PiYG')
```

Out[82]:



In [83]:

```
1 sb.color_palette('Greens')
```

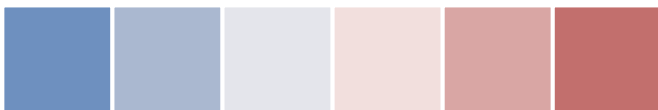
Out[83]:



In [84]:

```
1 sb.color_palette('vlag')
```

Out[84]:



In [85]:

```
1 df
```

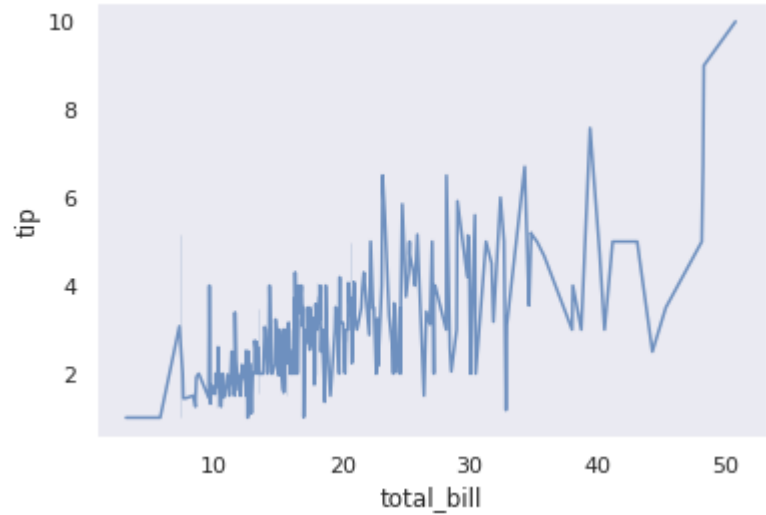
Out[85]:

	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
...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

244 rows × 7 columns

In [93]:

```
1 sb.lineplot(x="total_bill",y="tip",data=df)
2 sb.set_palette('vlag')
3 sb.set_context("notebook")
```

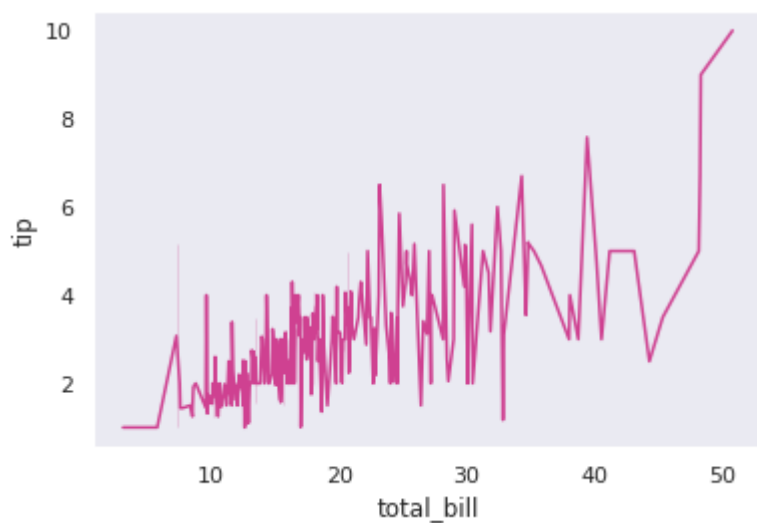


In []:

```
1
```

In [95]:

```
1 sb.lineplot(x="total_bill",y="tip",data=df)
2 sb.set_palette('PiYG')
3 sb.set_context("notebook")
```

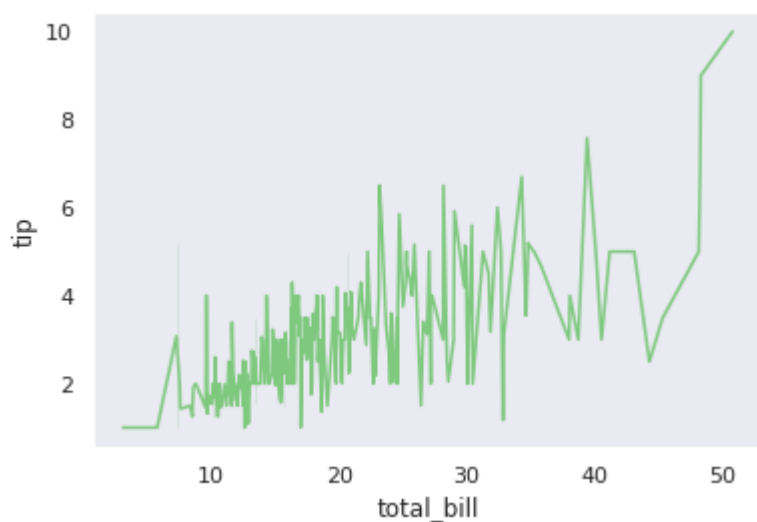


In []:

1

In [97]:

```
1 sb.lineplot(x="total_bill",y="tip",data=df)
2 sb.set_palette('Accent')
3 sb.set_context("notebook")
```



In []:

1

In [98]:

1 df

Out[98]:

	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
...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

244 rows × 7 columns

In [99]:

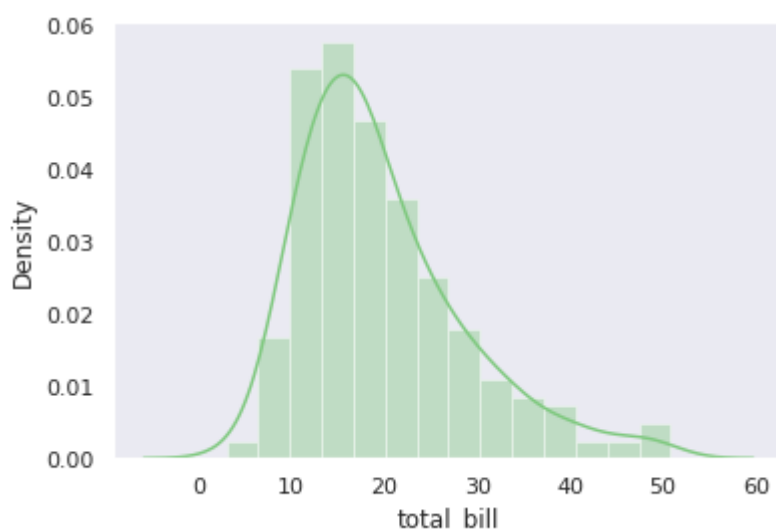
1 sb.distplot(df['total_bill'])

/home/punit/anaconda3/lib/python3.8/site-packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).

warnings.warn(msg, FutureWarning)

Out[99]:

<AxesSubplot:xlabel='total_bill', ylabel='Density'>



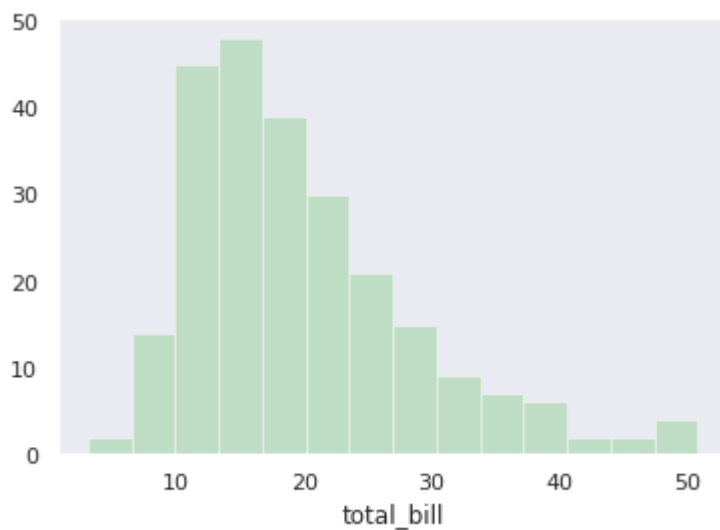
In [100]:

```
1 sb.distplot(df['total_bill'],kde=False)
```

```
/home/punit/anaconda3/lib/python3.8/site-packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

Out[100]:

<AxesSubplot:xlabel='total_bill'>



In [101]:

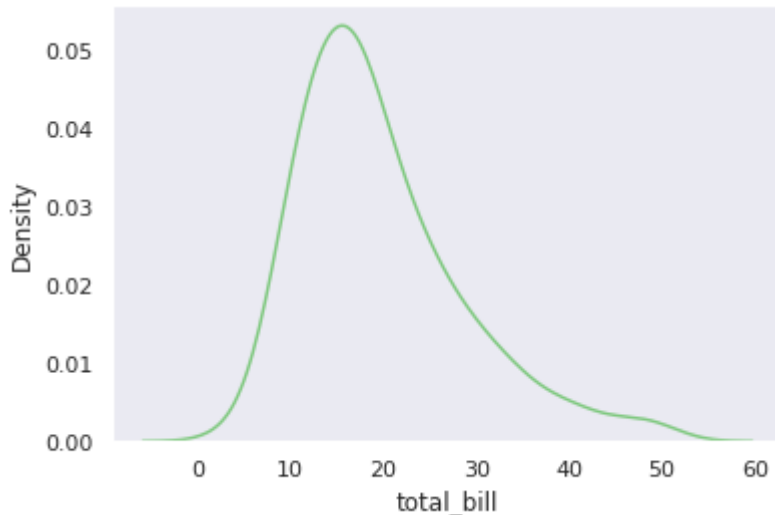
```
1 sb.distplot(df['total_bill'],hist=False)
```

/home/punit/anaconda3/lib/python3.8/site-packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `kdeplot` (an axes-level function for kernel density plots).

warnings.warn(msg, FutureWarning)

Out[101]:

<AxesSubplot:xlabel='total_bill', ylabel='Density'>



In []:

```
1
```

In [105]:

```
1 sb.scatterplot(x="total_bill",y="tip",data=df)
2 sb.set_palette('PiYG')
```



In [111]:

```
1 df
```

Out[111]:

	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
...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

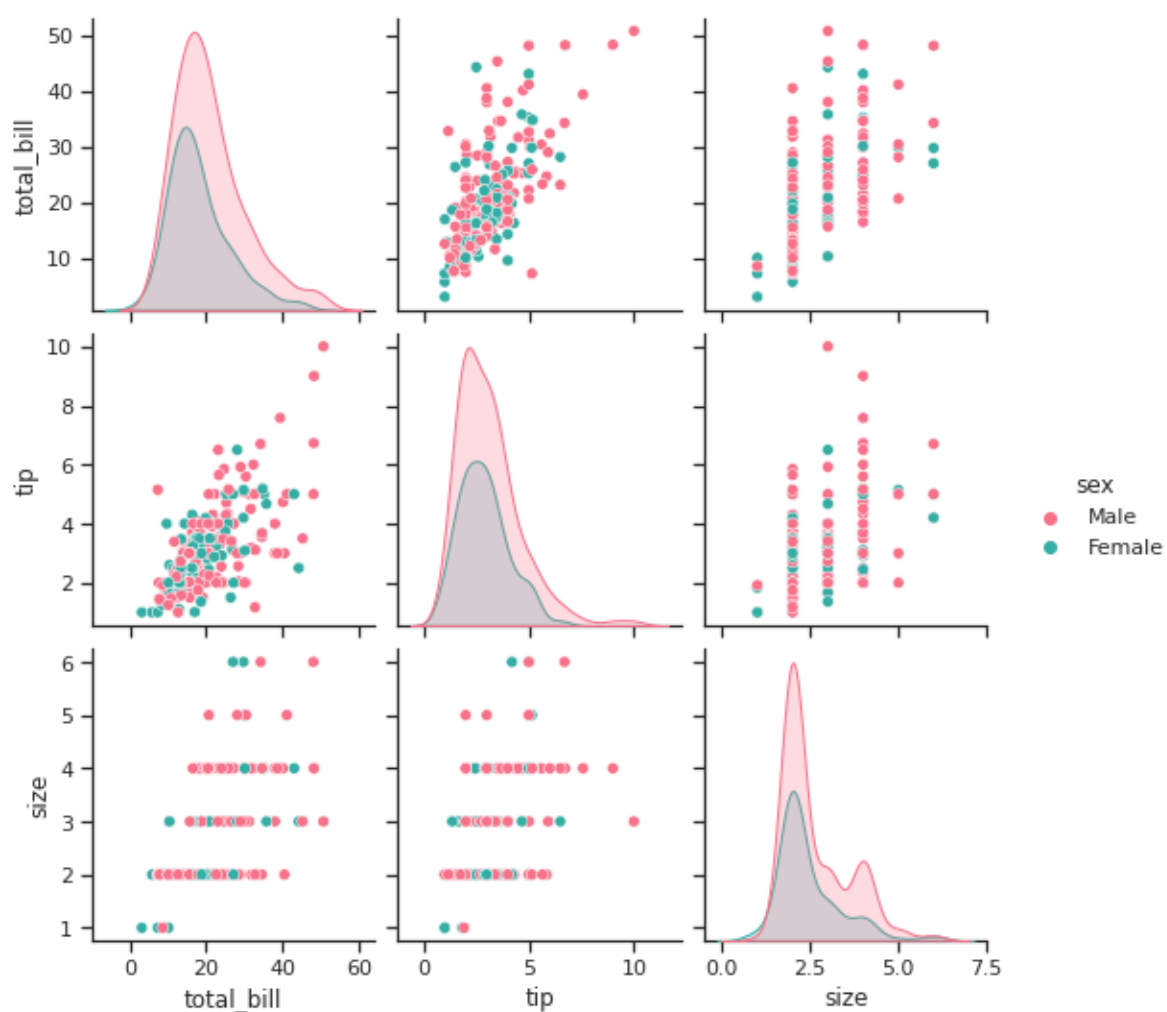
244 rows × 7 columns

In []:

```
1
```

In [110]:

```
1 sb.pairplot(df,hue='sex',kind='scatter',palette='husl')  
2 sb.set_style('ticks')
```



In []:

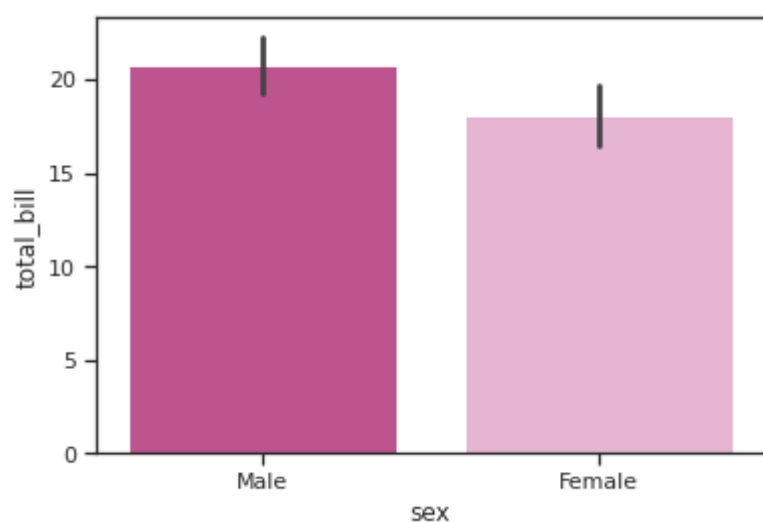
```
1
```

In [113]:

```
1 sb.barplot(x='sex',y='total_bill',data=df)
```

Out[113]:

<AxesSubplot:xlabel='sex', ylabel='total_bill'>

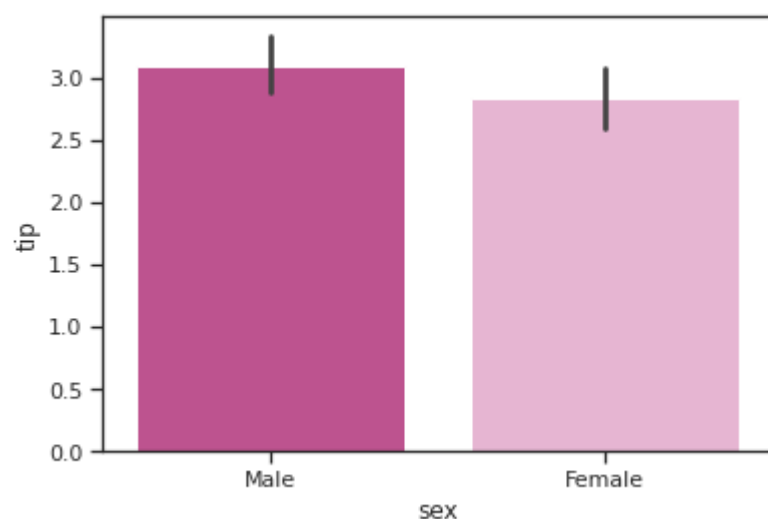


In [115]:

```
1 sb.barplot(x='sex',y='tip',data=df)
```

Out[115]:

<AxesSubplot:xlabel='sex', ylabel='tip'>

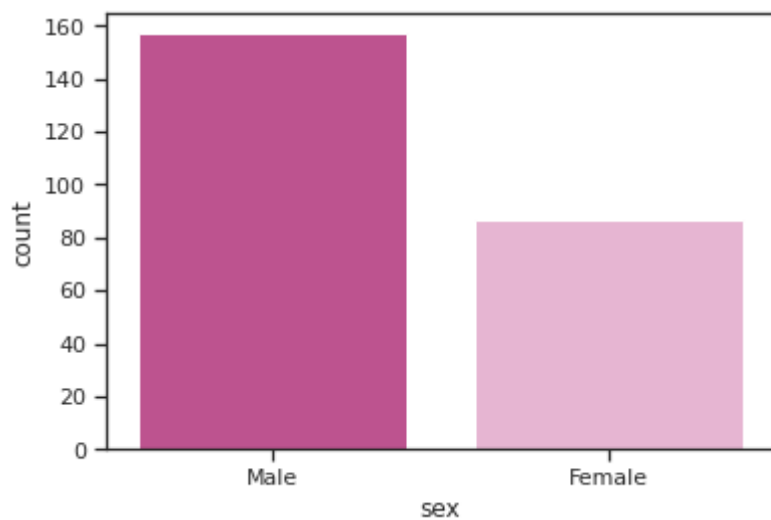


In [116]:

```
1 sb.countplot(x='sex',data=df)
```

Out[116]:

<AxesSubplot:xlabel='sex', ylabel='count'>



In [117]:

```
1 df1 = sb.load_dataset('iris')
```

In [118]:

```
1 df1
```

Out[118]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

150 rows × 5 columns

In [119]:

```
1 sb.stripplot(x='species',y='sepal_width',data=df1)
```

Out[119]:

<AxesSubplot:xlabel='species', ylabel='sepal_width'>

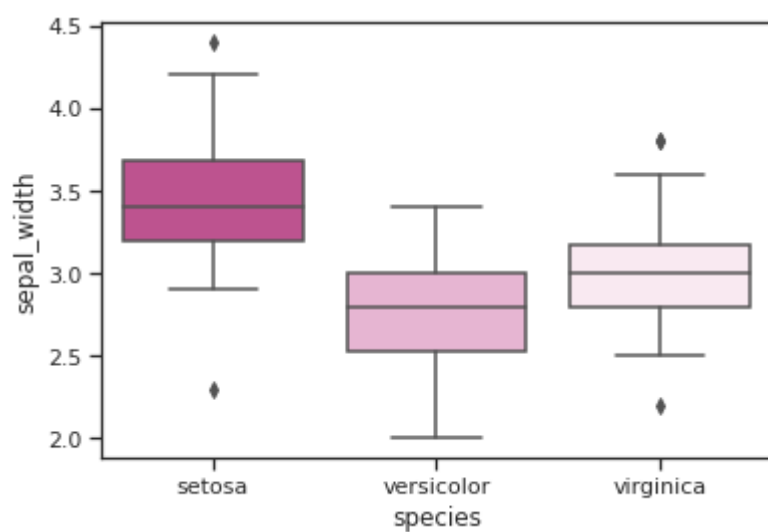


In [120]:

```
1 sb.boxplot(x='species',y='sepal_width',data=df1)
```

Out[120]:

<AxesSubplot:xlabel='species', ylabel='sepal_width'>



In [121]:

```
1 sb.swarmplot(x='species',y='sepal_width',data=df1)
```

Out[121]:

<AxesSubplot:xlabel='species', ylabel='sepal_width'>



In [123]:

```
1 df1
```

Out[123]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

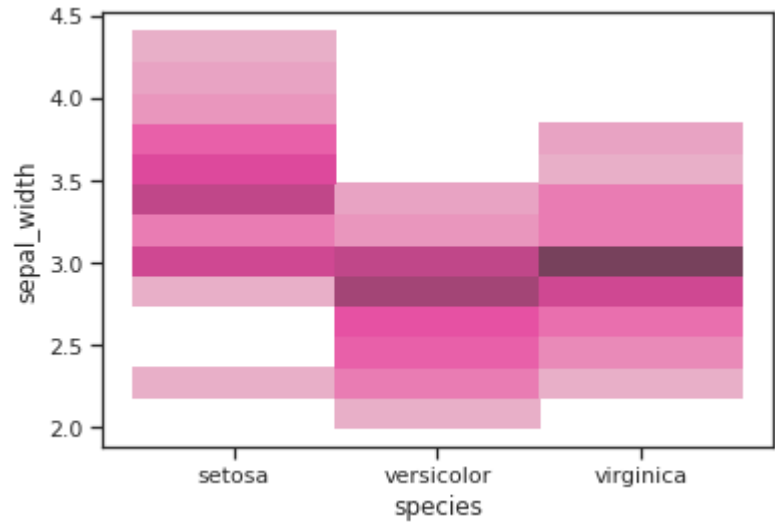
150 rows × 5 columns

In [122]:

```
1 sb.histplot(x='species',y='sepal_width',data=df1)
```

Out[122]:

<AxesSubplot:xlabel='species', ylabel='sepal_width'>



In []:

```
1
```

In [124]:

```
1 df
```

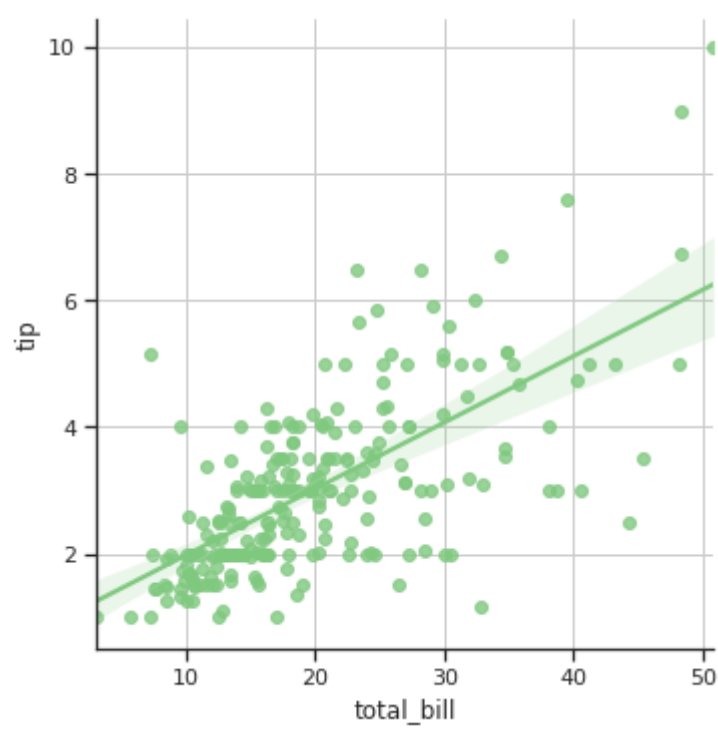
Out[124]:

	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
...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

244 rows × 7 columns

In [132]:

```
1 sb.lmplot(x='total_bill',y='tip',data=df)
2 sb.set_palette('Accent')
3 plt.grid(True)
4 plt.show()
5 sb.set_context("notebook")
```



In []:

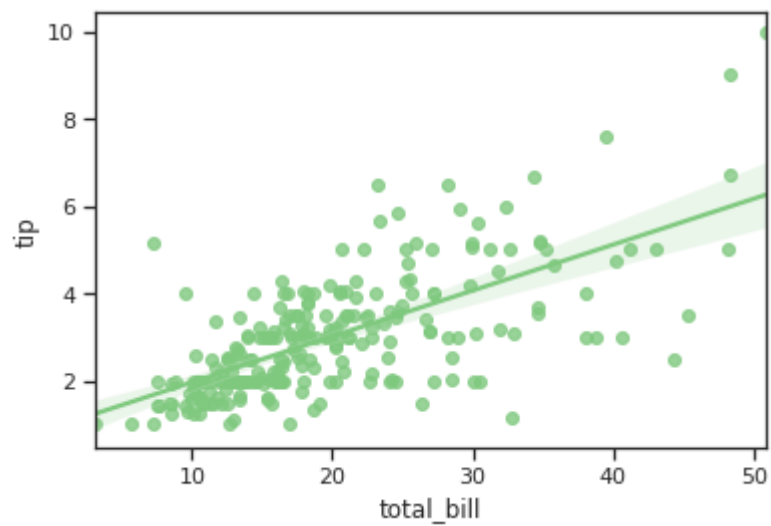
1

In [133]:

```
1 sb.regplot(x='total_bill',y='tip',data=df)
```

Out[133]:

<AxesSubplot:xlabel='total_bill', ylabel='tip'>



In []:

1

In [136]:

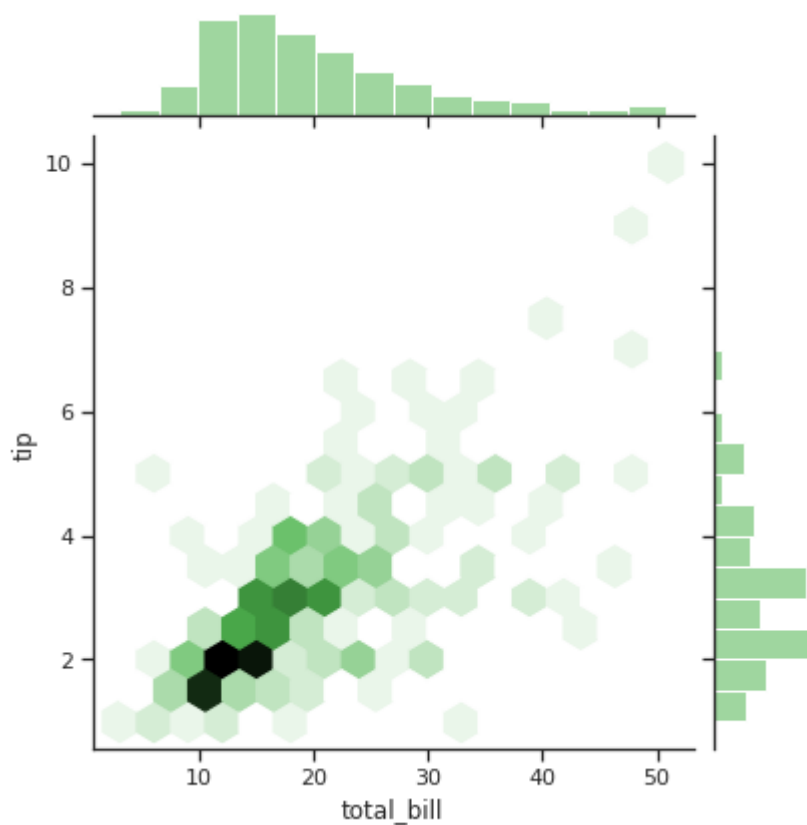
```
1 sb.jointplot("total_bill", "tip", data=df, kind="hex")
```

```
/home/punit/anaconda3/lib/python3.8/site-packages/seaborn/_decorators.py:36: FutureWarning: Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

```
warnings.warn(
```

Out[136]:

<seaborn.axisgrid.JointGrid at 0x7f81f9a8bee0>



In [137]:

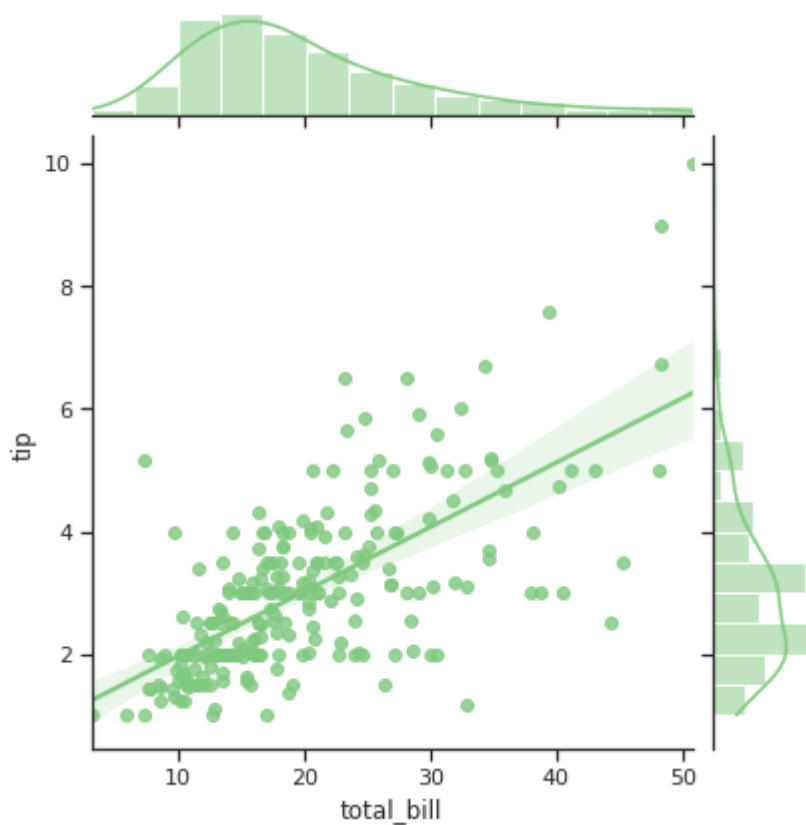
```
1 sb.jointplot("total_bill", "tip", data=df, kind="reg")
```

```
/home/punit/anaconda3/lib/python3.8/site-packages/seaborn/_decorators.py:36: FutureWarning: Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

```
warnings.warn(
```

Out[137]:

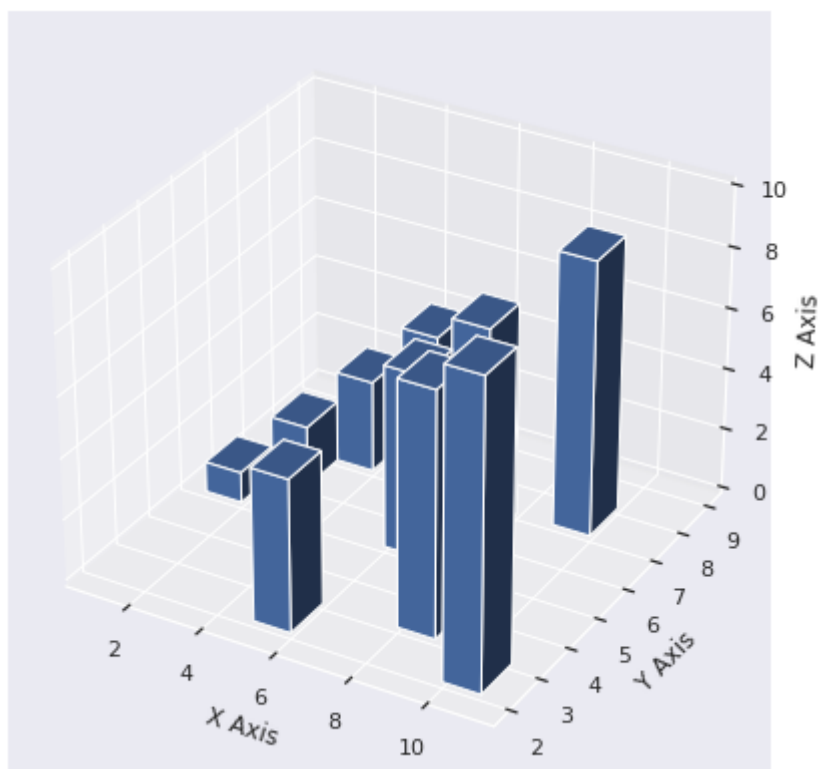
<seaborn.axisgrid.JointGrid at 0x7f81f959bd30>



In [139]:

```
1 from mpl_toolkits.mplot3d import axes3d
2 sb.set(style='darkgrid')
3 fig = plt.figure()
4 fig = plt.figure(figsize=(10,7))
5 ax = fig.add_subplot(111,projection='3d')
6 x = [1,2,3,4,5,6,7,8,9,10]
7 y = [5,6,7,8,2,5,6,3,7,2]
8 z = np.zeros(10)
9 dx = np.ones(10)
10 dy = np.ones(10)
11 dz = [1,2,3,4,5,6,7,8,9,10]
12
13 ax.bar3d(x,y,z,dx,dy,dz)
14 ax.set_xlabel('X Axis')
15 ax.set_ylabel('Y Axis')
16 ax.set_zlabel('Z Axis')
17 plt.show()
```

<Figure size 432x288 with 0 Axes>



Plotly

```
1 pip install plotly
```

In [140]:

```
1 import plotly.express as px
```

In [141]:

```
1 fig = px.line(x=[1,2,3],y=[1,2,3])
```

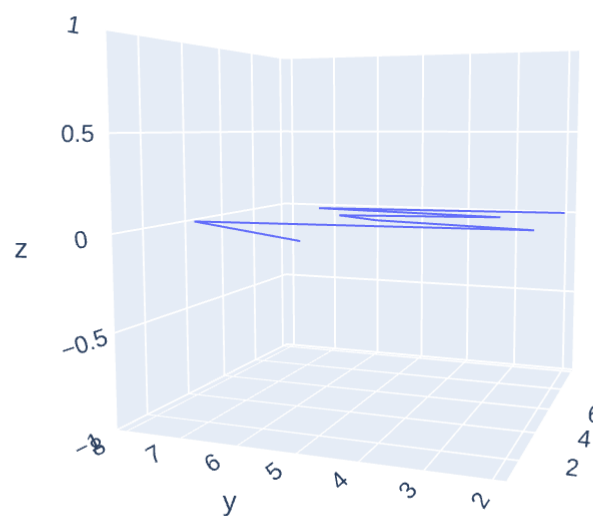
In [143]:

```
1 fig.show()
```



In [145]:

```
1 x = [1,2,3,4,5,6,7,8,9,10]
2 y = [5,6,7,8,2,5,6,3,7,2]
3 z = np.zeros(10)
4 fig = px.line_3d(x=x,y=y,z=z)
5 fig.show()
```



In [146]:

1	df1
---	-----

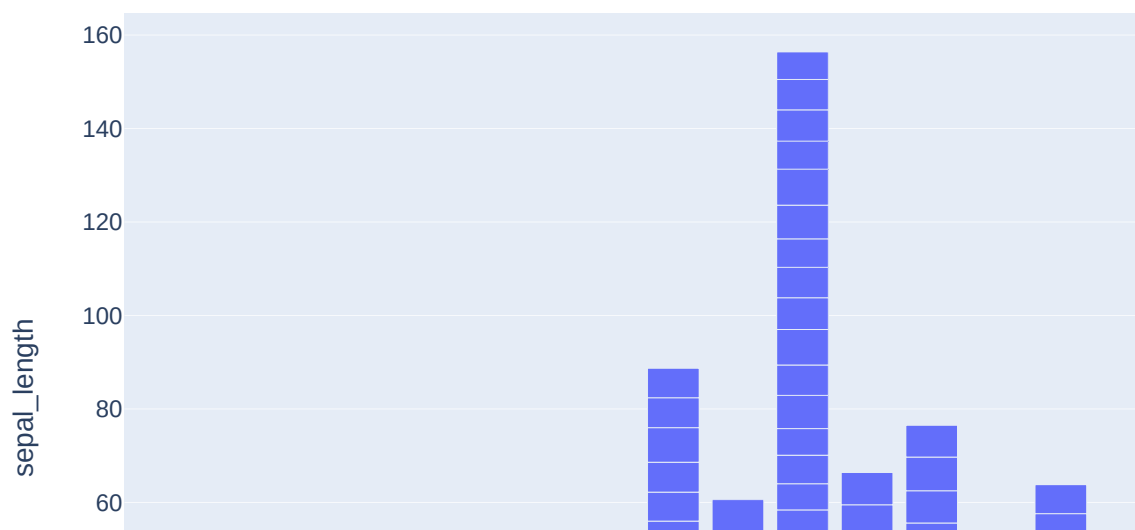
Out[146]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa
...
145	6.7	3.0	5.2	2.3	virginica
146	6.3	2.5	5.0	1.9	virginica
147	6.5	3.0	5.2	2.0	virginica
148	6.2	3.4	5.4	2.3	virginica
149	5.9	3.0	5.1	1.8	virginica

150 rows × 5 columns

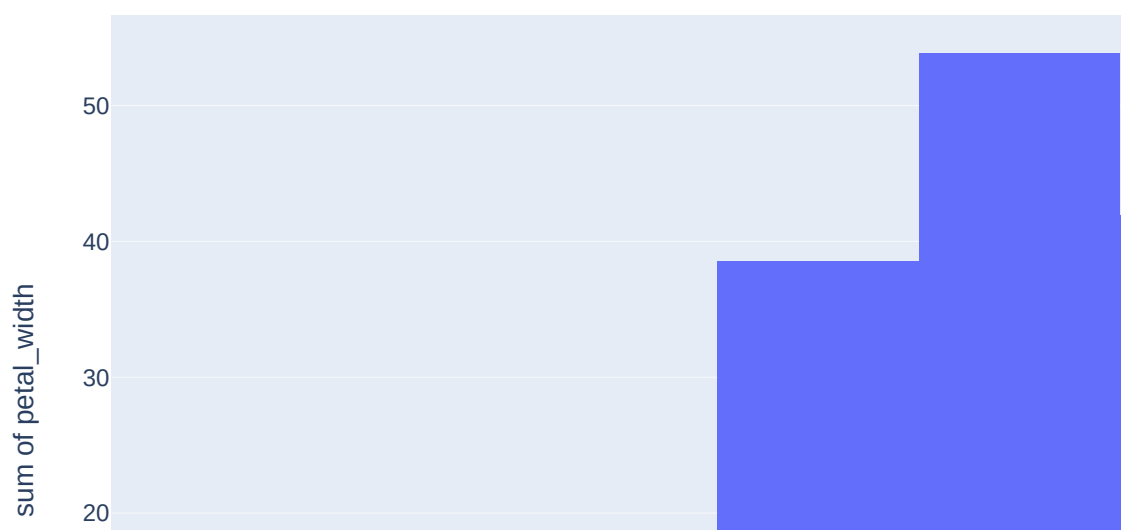
In [147]:

```
1 fig = px.bar(df1,x="sepal_width",y="sepal_length")  
2 fig.show()
```



In [149]:

```
1 px.histogram(df1,x="sepal_length",y="petal_width")
```



In [150]:

```
1 df
```

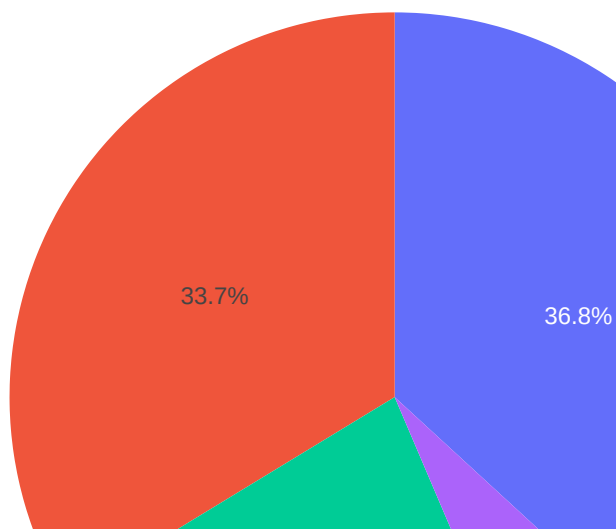
Out[150]:

	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
...
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	2
241	22.67	2.00	Male	Yes	Sat	Dinner	2
242	17.82	1.75	Male	No	Sat	Dinner	2
243	18.78	3.00	Female	No	Thur	Dinner	2

244 rows × 7 columns

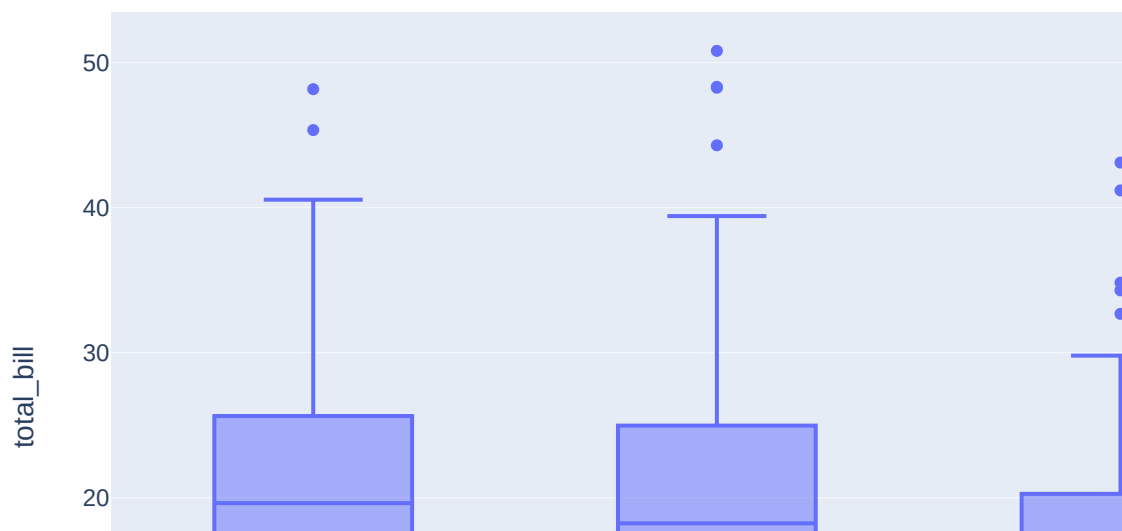
In [151]:

```
1 px.pie(df, values="total_bill", names="day")
```



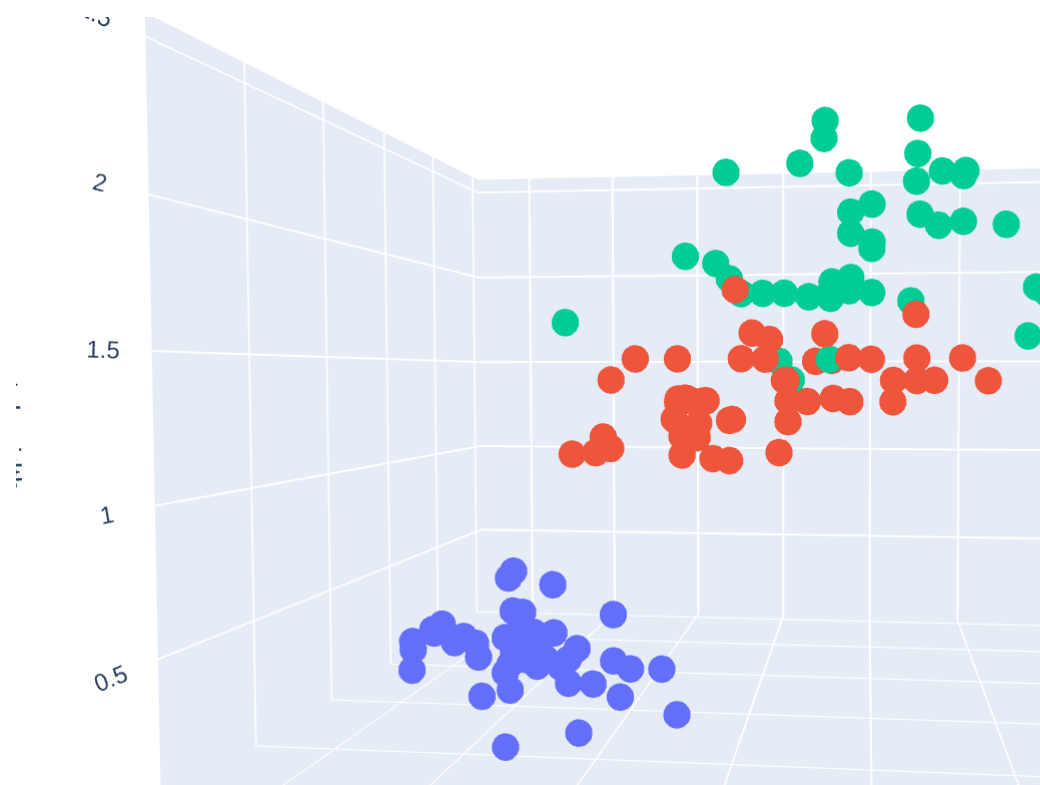
In [152]:

```
1 px.box(df,x="day",y="total_bill")
```



In [153]:

```
1 px.scatter_3d(df1,x="sepal_width",  
2               y="sepal_length",  
3               z="petal_width",  
4               color='species')
```



In []:

1