

```
pip install seaborn
```

Requirement already satisfied: seaborn in c:\users\ahmad\anaconda3\lib\site-packages (0.12.2)

Requirement already satisfied: numpy!=1.24.0,>=1.17 in c:\users\ahmad\anaconda3\lib\site-packages (from seaborn) (1.24.3)

Requirement already satisfied: pandas>=0.25 in c:\users\ahmad\anaconda3\lib\site-packages (from seaborn) (2.0.3)

Requirement already satisfied: matplotlib!=3.6.1,>=3.1 in c:\users\ahmad\anaconda3\lib\site-packages (from seaborn) (3.7.2)

Requirement already satisfied: contourpy>=1.0.1 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (1.0.5)

Requirement already satisfied: cycler>=0.10 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (0.11.0)

Requirement already satisfied: fonttools>=4.22.0 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (4.25.0)

Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (1.4.4)

Requirement already satisfied: packaging>=20.0 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (23.1)

Requirement already satisfied: pillow>=6.2.0 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (9.4.0)

Requirement already satisfied: pyparsing<3.1,>=2.3.1 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (3.0.9)

Requirement already satisfied: python-dateutil>=2.7 in c:\users\ahmad\anaconda3\lib\site-packages (from matplotlib!=3.6.1,>=3.1->seaborn) (2.8.2)

Requirement already satisfied: pytz>=2020.1 in c:\users\ahmad\anaconda3\lib\site-packages (from pandas>=0.25->seaborn) (2023.3.post1)

Requirement already satisfied: tzdata>=2022.1 in c:\users\ahmad\anaconda3\lib\site-packages (from pandas>=0.25->seaborn) (2023.3)

Requirement already satisfied: six>=1.5 in c:\users\ahmad\anaconda3\lib\site-packages (from python-dateutil>=2.7->matplotlib!=3.6.1,>=3.1->seaborn) (1.16.0)

Note: you may need to restart the kernel to use updated packages.

```
import seaborn as sns
```

```
sns.get_dataset_names()
```

```
['anagrams',  
'anscombe',
```

```
'attention',
'brain_networks',
'car_crashes',
'diamonds',
'dots',
'dowjones',
'exercise',
'flights',
'fmri',
'geyser',
'glue',
'healthexp',
'iris',
'mpg',
'penguins',
'planets',
'seaice',
'taxis',
'tips',
'titanic',
'anagrams',
'anagrams',
'anscombe',
'anscombe',
'attention',
'attention',
'brain_networks',
'brain_networks',
'car_crashes',
'car_crashes',
'diamonds',
'diamonds',
'dots',
'dots',
'dowjones',
'dowjones',
'exercise',
'exercise',
'flights',
'flights',
'fmri',
'fmri',
'geyser',
'geyser',
'glue',
'glue',
'healthexp',
'healthexp',
'iris',
```

```
'iris',  
'mpg',  
'mpg',  
'penguins',  
'penguins',  
'planets',  
'planets',  
'seaice',  
'seaice',  
'taxi',  
'taxi',  
'tips',  
'tips',  
'titanic',  
'titanic',  
'anagrams',  
'anscombe',  
'attention',  
'brain_networks',  
'car_crashes',  
'diamonds',  
'dots',  
'dowjones',  
'exercise',  
'flights',  
'fmri',  
'geyser',  
'glue',  
'healthexp',  
'iris',  
'mpg',  
'penguins',  
'planets',  
'seaice',  
'taxi',  
'tips',  
'titanic']
```

```
type(sns.load_dataset('anagrams'))
```

```
pandas.core.frame.DataFrame
```

```
df1 = sns.load_dataset('anagrams')
```

```
df1.tail()
```

	subidr	attnr	num1	num2	num3
15	16	focused	6	8.0	7
16	17	focused	7	7.0	6
17	18	focused	7	8.0	6

```
18      19  focused    5    6.0    6
19      20  focused    6    6.0    5
```

Scatterplot

```
import seaborn as sns
import pandas as pd
import numpy as np
```

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

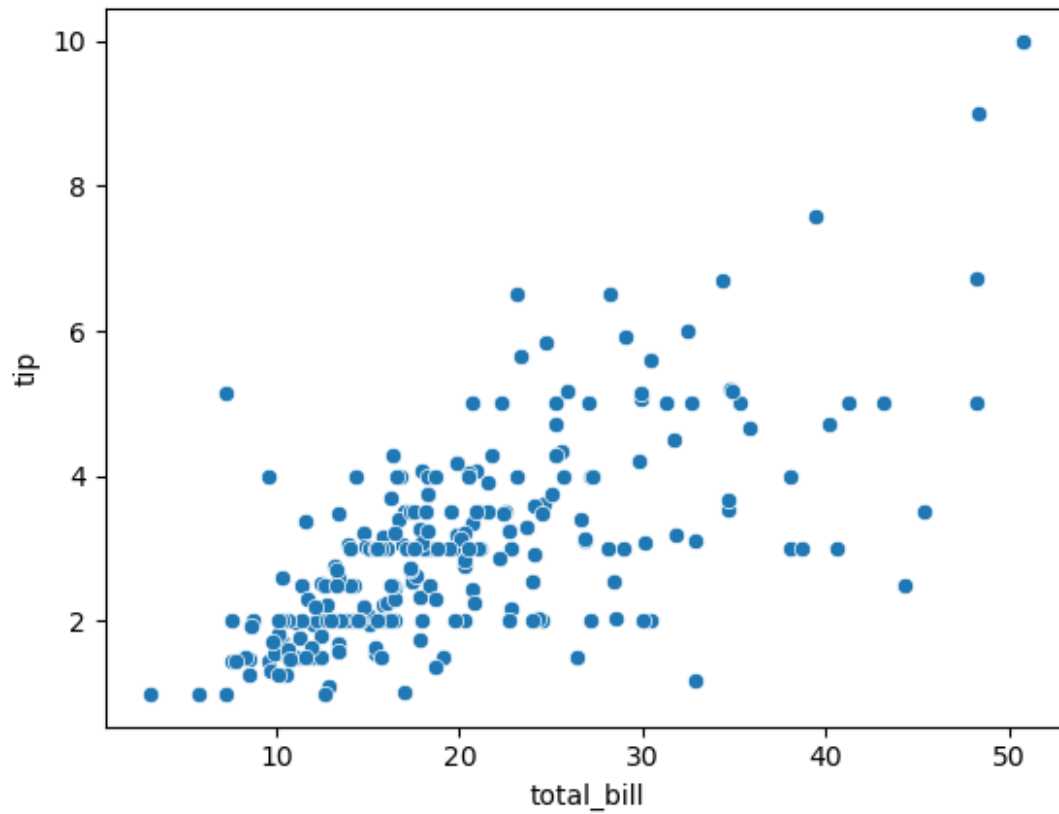
```
tips
```

	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 x 7 columns]
```

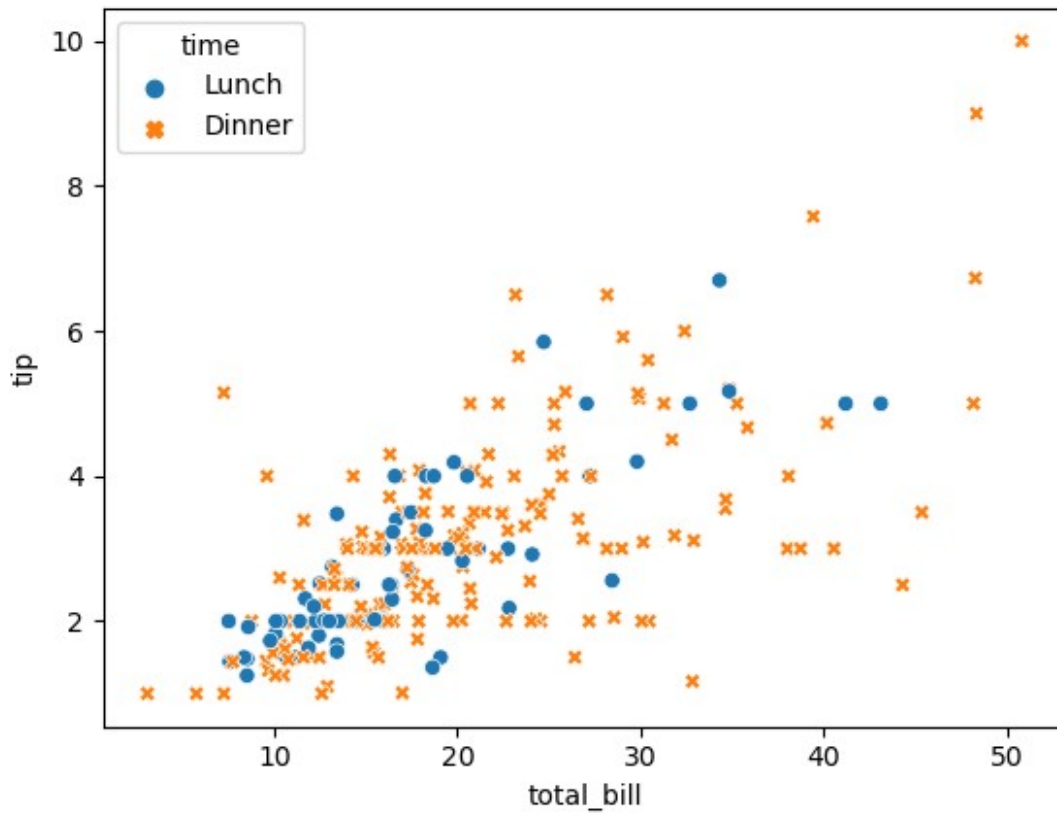
```
sns.scatterplot(data=tips, x="total_bill", y="tip")
```

```
<Axes: xlabel='total_bill', ylabel='tip'>
```

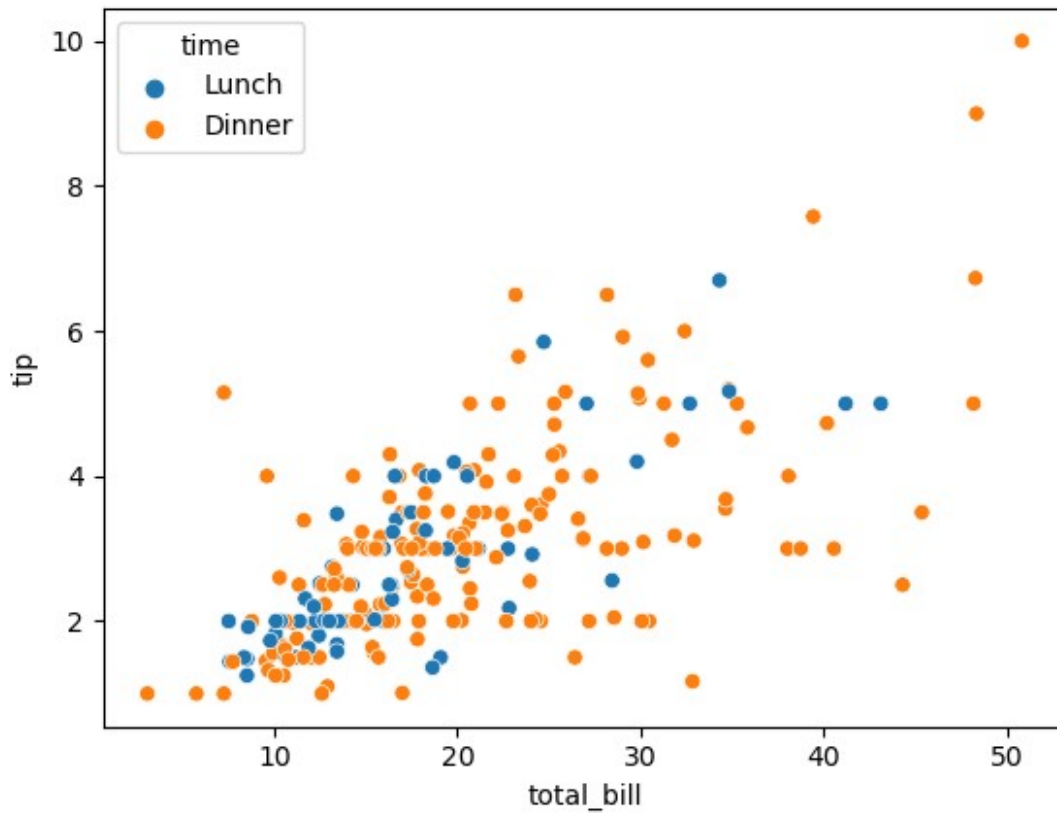


```
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="time",  
style="time")
```

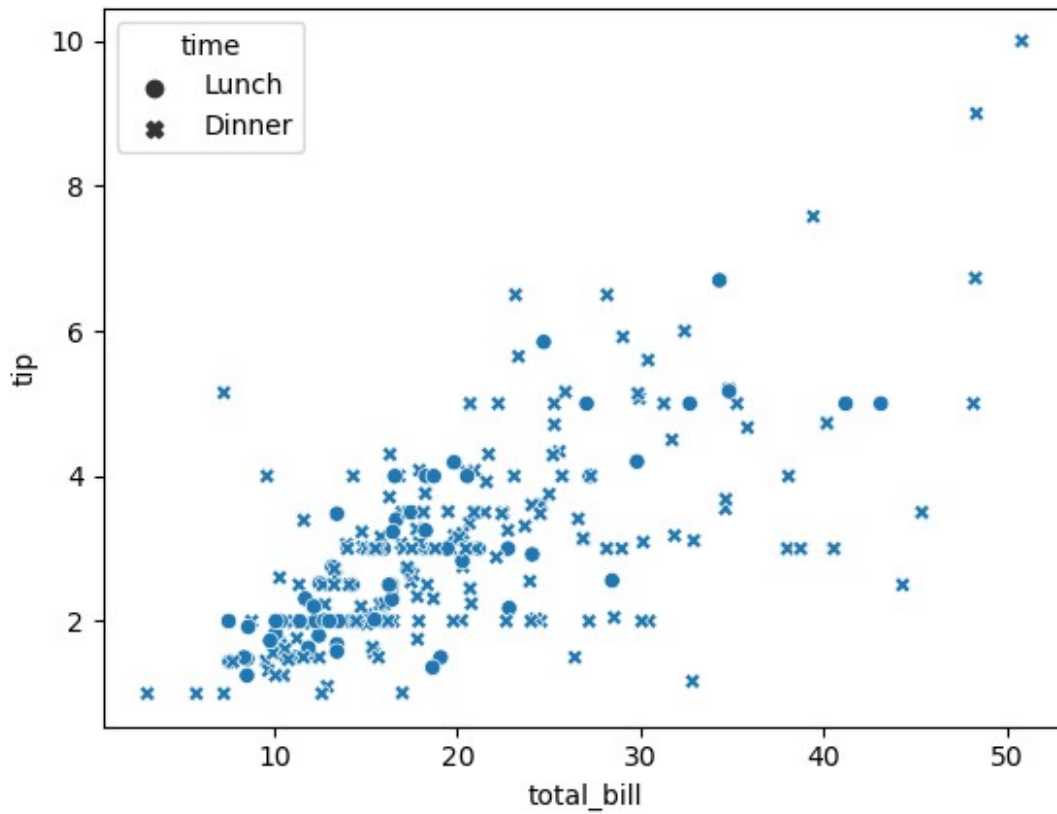
```
<Axes: xlabel='total_bill', ylabel='tip'>
```



```
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="time")  
<Axes: xlabel='total_bill', ylabel='tip'>
```

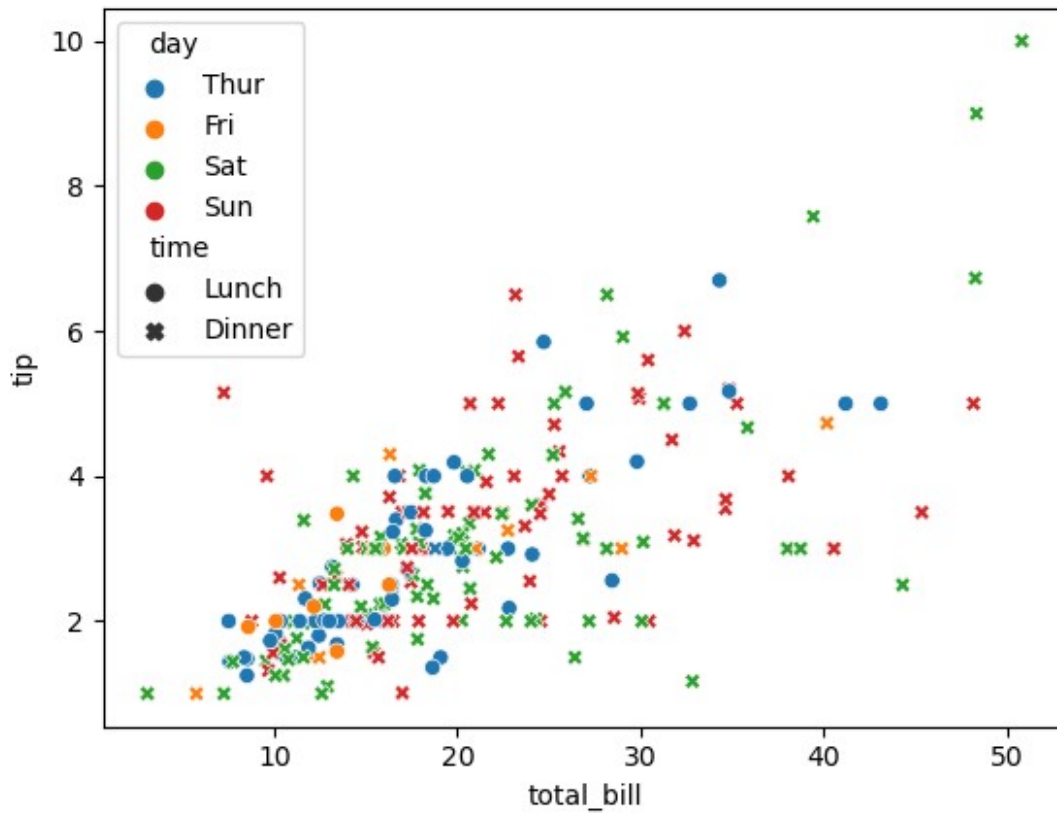


```
sns.scatterplot(data=tips, x="total_bill", y="tip", style="time")  
<Axes: xlabel='total_bill', ylabel='tip'>
```

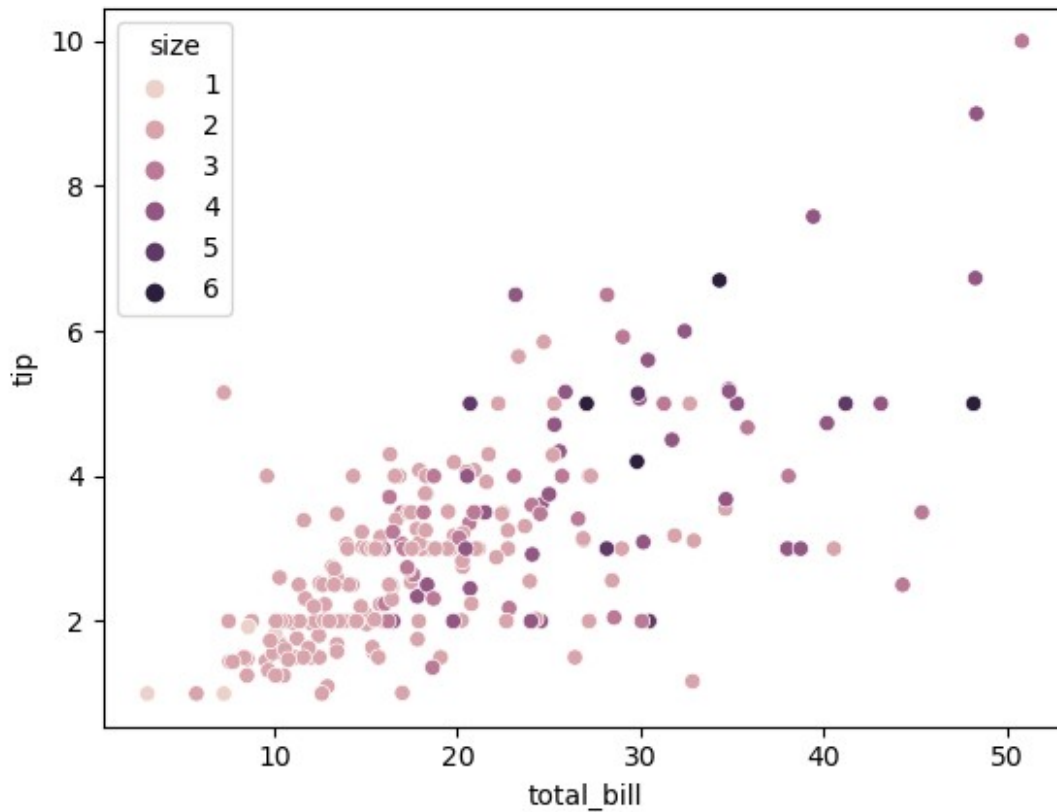


```
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="day",  
style="time")
```

```
<Axes: xlabel='total_bill', ylabel='tip'>
```

```
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="size")  
<Axes: xlabel='total_bill', ylabel='tip'>
```



```
tip_rate = tips.eval("tip/total_bill").rename("tip_rate")
```

```
tip_rate
```

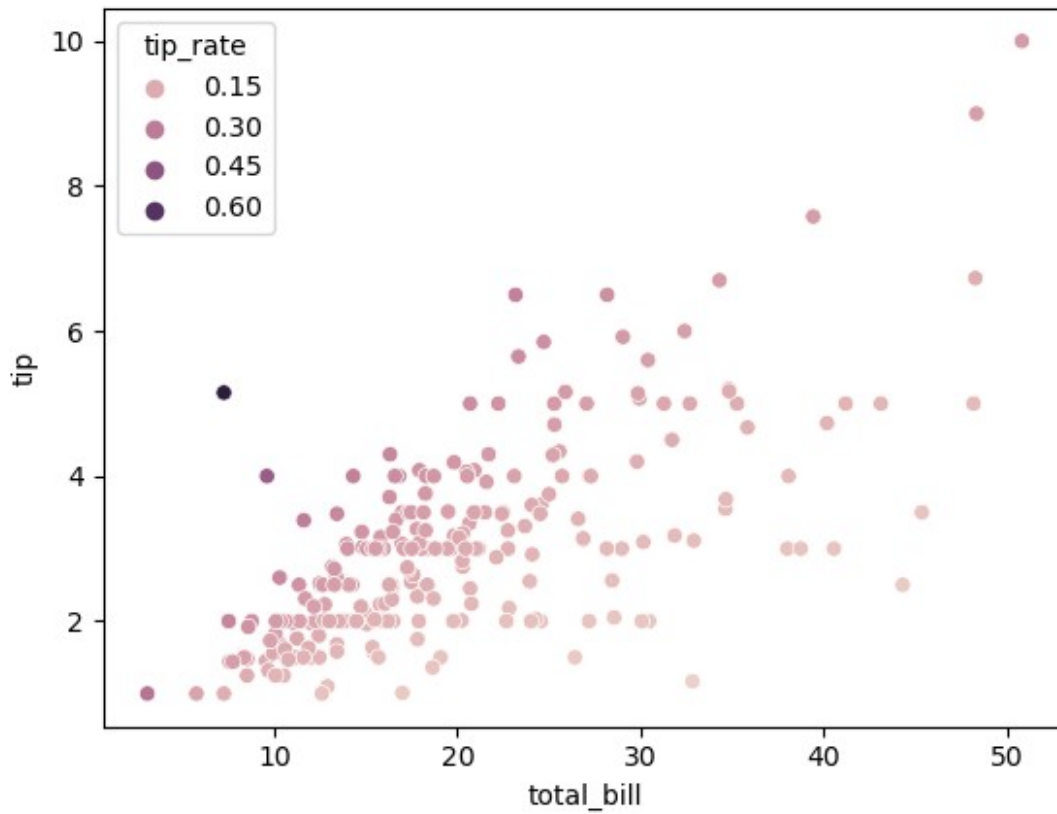
```
0    0.059447
1    0.160542
2    0.166587
3    0.139780
4    0.146808
```

```
...
239  0.203927
240  0.073584
241  0.088222
242  0.098204
243  0.159744
```

```
Name: tip_rate, Length: 244, dtype: float64
```

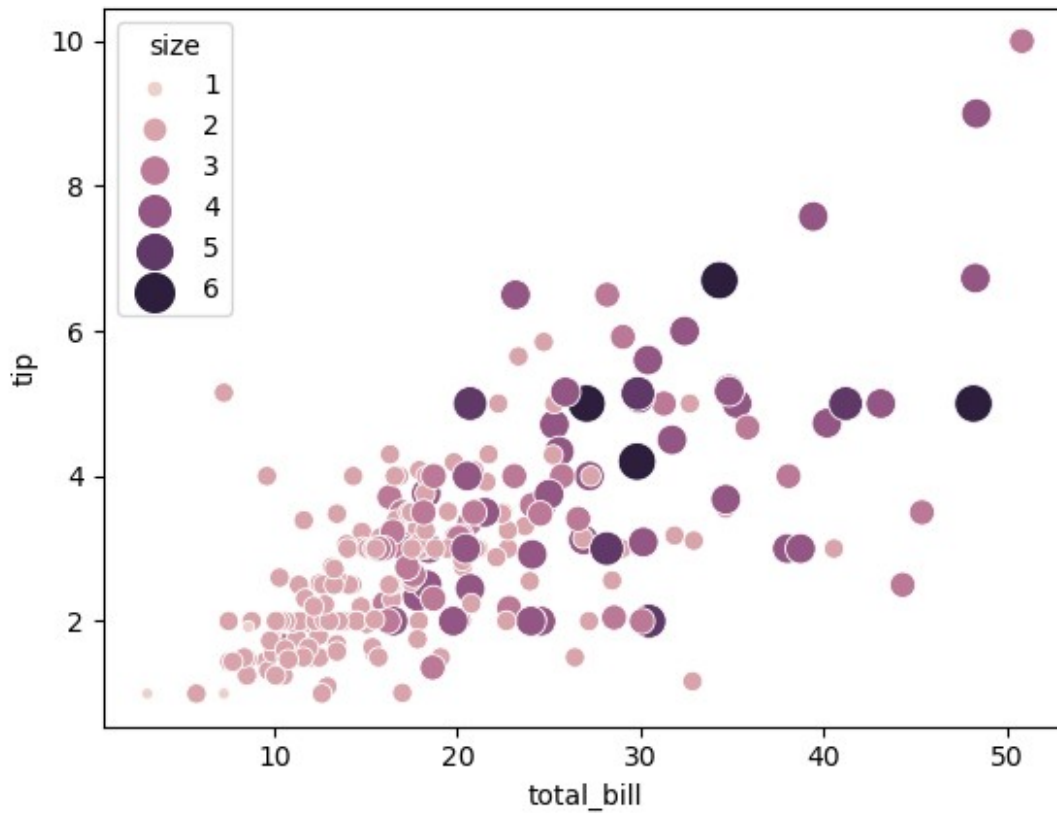
```
sns.scatterplot(data=tips, x="total_bill", y="tip", hue=tip_rate)
```

```
<Axes: xlabel='total_bill', ylabel='tip'>
```

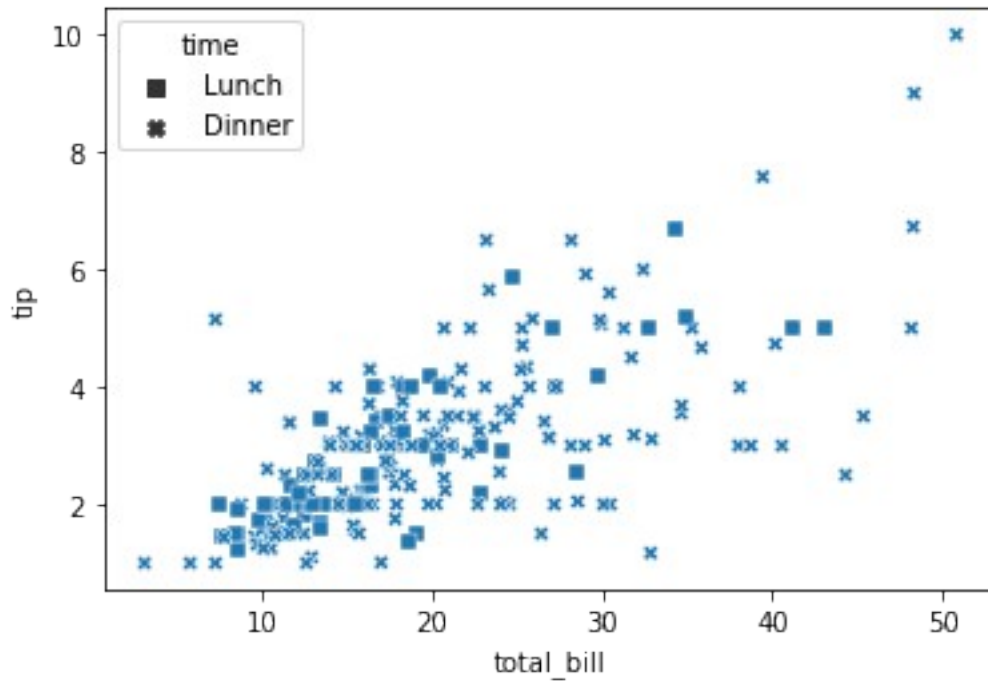


```
sns.scatterplot(data=tips, x="total_bill", y="tip", hue="size",  
size="size", sizes=(20, 200))  
#, legend="full")
```

```
<Axes: xlabel='total_bill', ylabel='tip'>
```



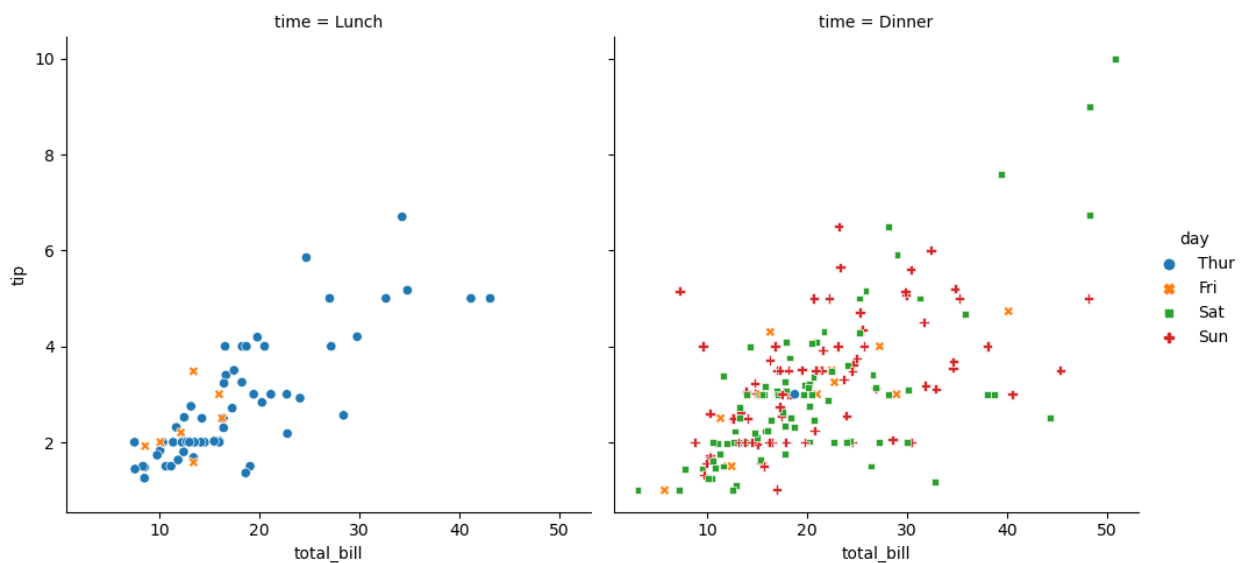
```
markers = {"Lunch": "s", "Dinner": "X"}
sns.scatterplot(data=tips,
                x="total_bill",
                y="tip", style="time", markers= markers)
plt.show()
```



```
sns.relplot(data=tips, x="total_bill", y="tip", col="time", hue="day",
style="day", kind="scatter")
```

C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:
UserWarning: The figure layout has changed to tight
self._figure.tight_layout(*args, **kwargs)

<seaborn.axisgrid.FacetGrid at 0x237570bdf90>



Histogram

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

```
penguins
```

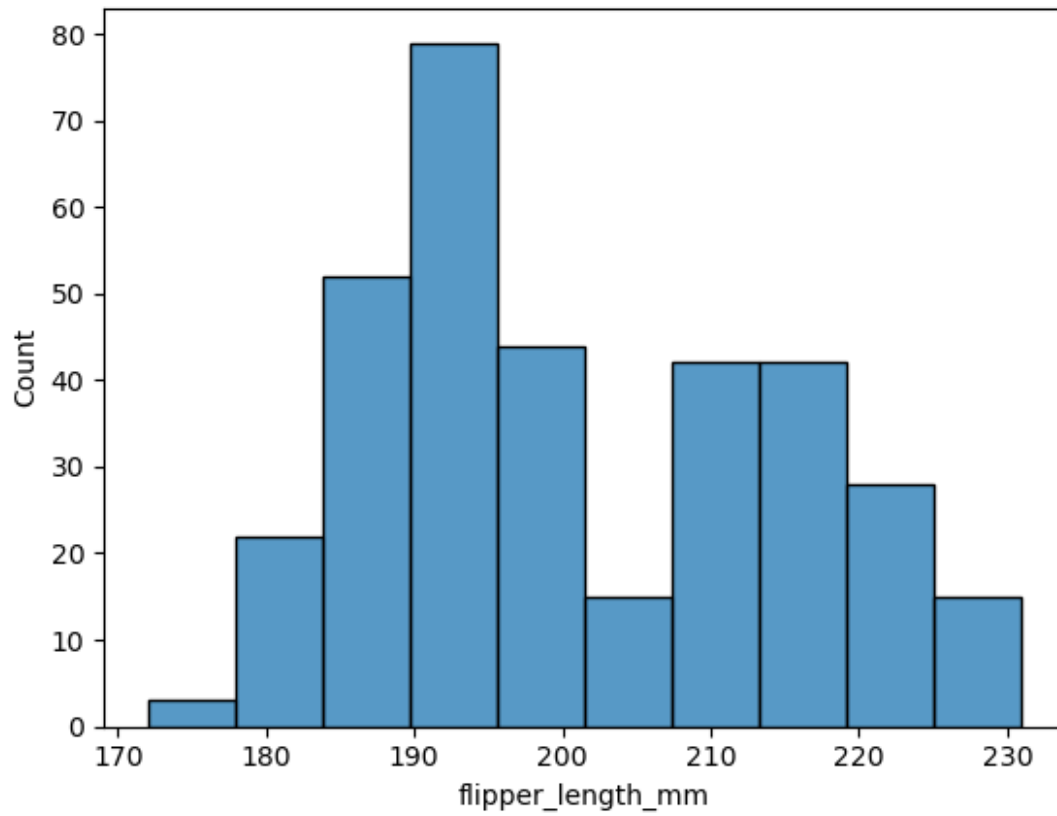
	species	island	bill_length_mm	bill_depth_mm
0	Adelie	Torgersen	39.1	18.7
1	Adelie	Torgersen	39.5	17.4
2	Adelie	Torgersen	40.3	18.0
3	Adelie	Torgersen	NaN	NaN
4	Adelie	Torgersen	36.7	19.3
...
339	Gentoo	Biscoe	NaN	NaN
340	Gentoo	Biscoe	46.8	14.3
341	Gentoo	Biscoe	50.4	15.7
342	Gentoo	Biscoe	45.2	14.8
343	Gentoo	Biscoe	49.9	16.1

	body_mass_g	sex
0	3750.0	Male
1	3800.0	Female
2	3250.0	Female
3	NaN	NaN
4	3450.0	Female
...
339	NaN	NaN
340	4850.0	Female
341	5750.0	Male
342	5200.0	Female
343	5400.0	Male

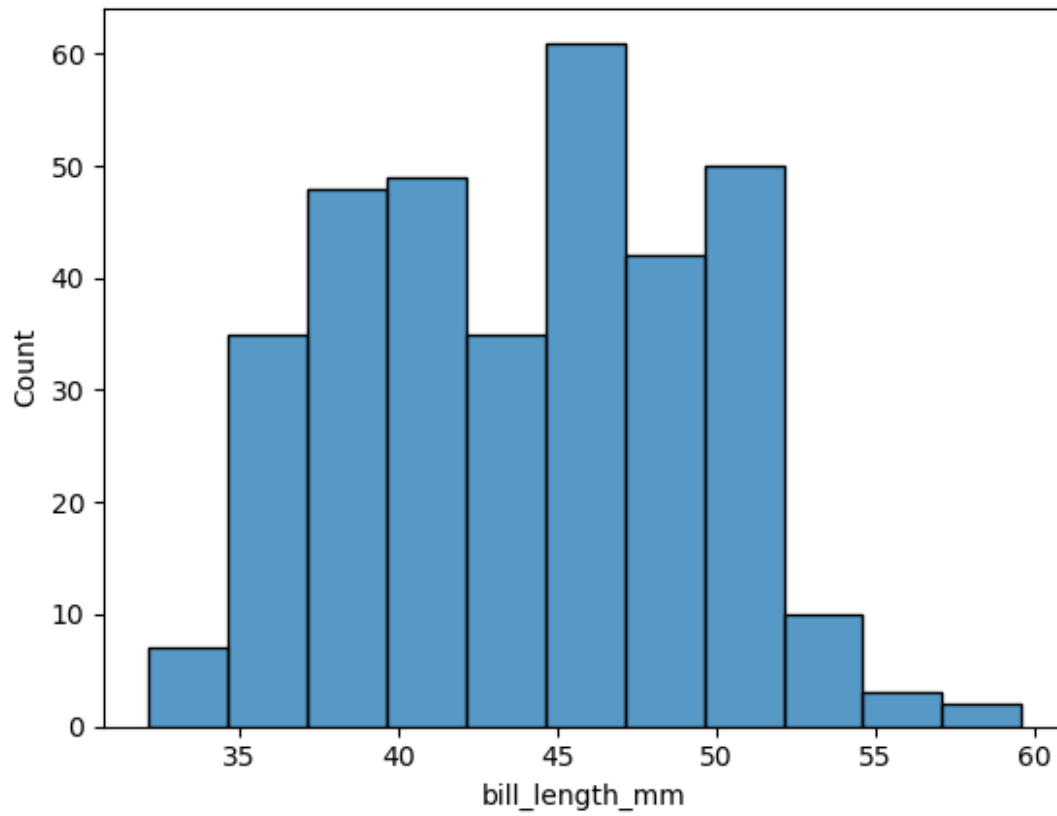
```
[344 rows x 7 columns]
```

```
sns.histplot(data=penguins, x="flipper_length_mm")
```

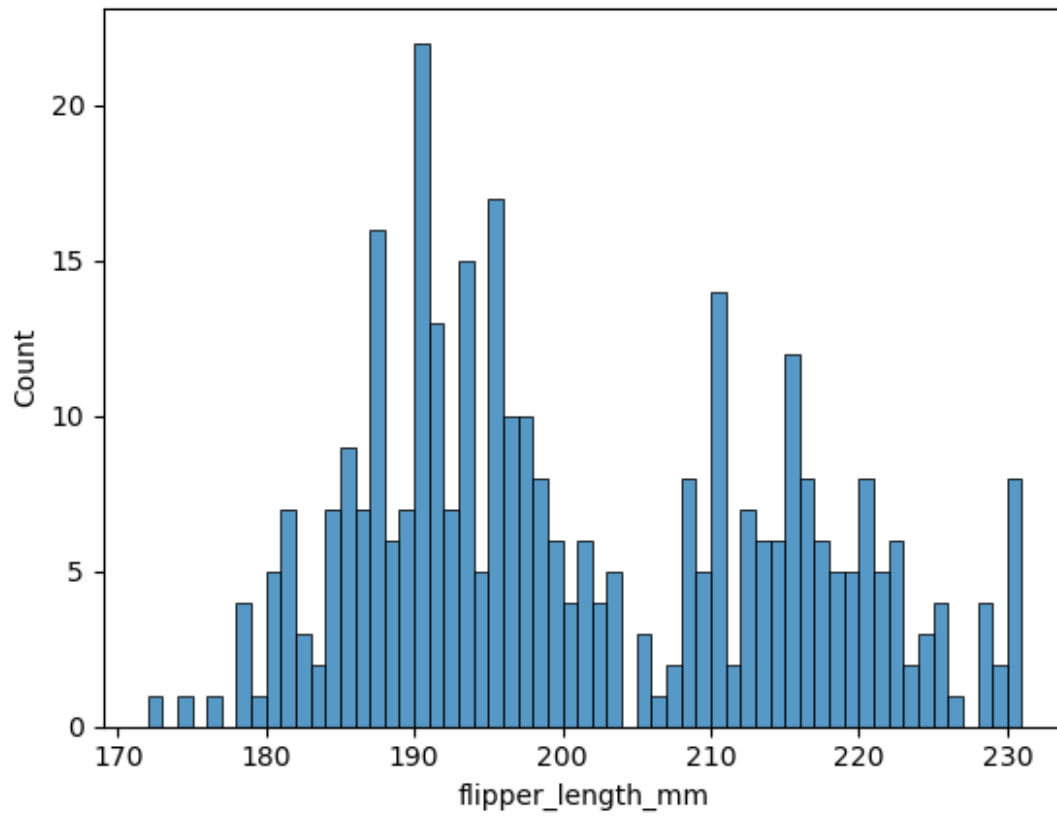
```
<Axes: xlabel='flipper_length_mm', ylabel='Count'>
```



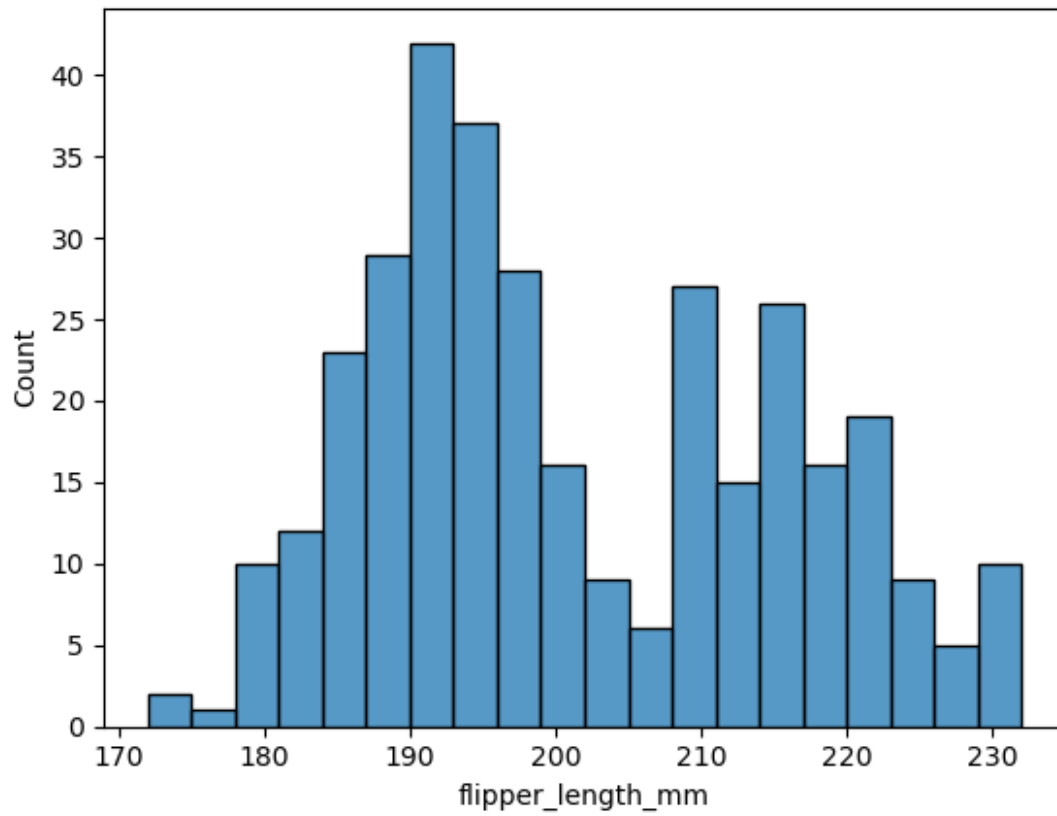
```
sns.histplot(data=penguins, x="bill_length_mm")  
<Axes: xlabel='bill_length_mm', ylabel='Count'>
```



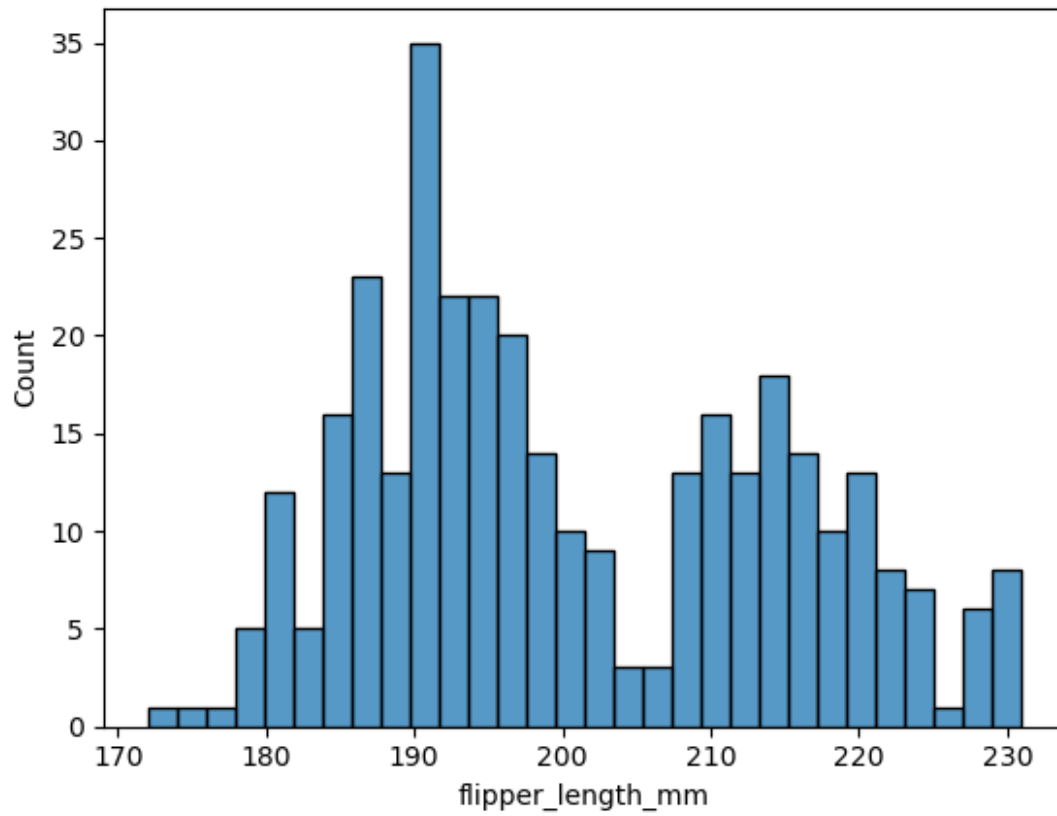
```
sns.histplot(data=penguins, x="flipper_length_mm", binwidth=1)  
<Axes: xlabel='flipper_length_mm', ylabel='Count'>
```

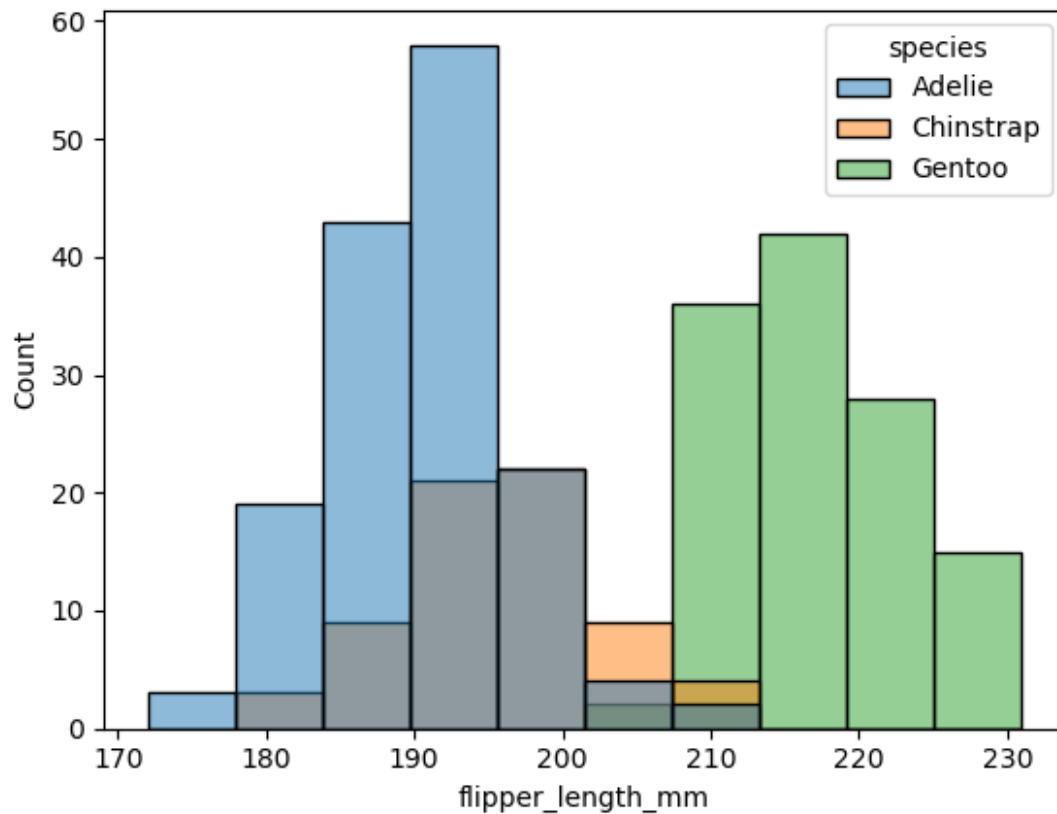
```
sns.histplot(data=penguins, x="flipper_length_mm", binwidth=3)  
<Axes: xlabel='flipper_length_mm', ylabel='Count'>
```



```
sns.histplot(data=penguins, x="flipper_length_mm", bins=30)  
<Axes: xlabel='flipper_length_mm', ylabel='Count'>
```



```
sns.histplot(data=penguins, x="flipper_length_mm", hue="species")  
<Axes: xlabel='flipper_length_mm', ylabel='Count'>
```



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

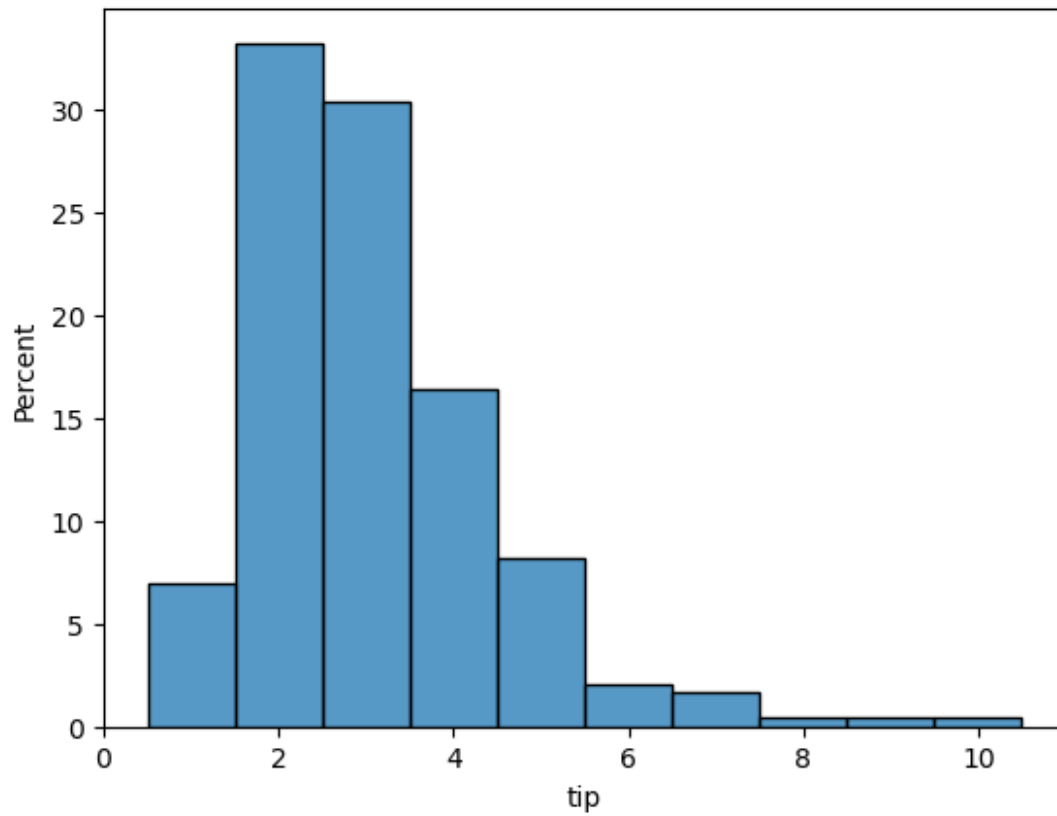
```
tips
```

	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 x 7 columns]
```

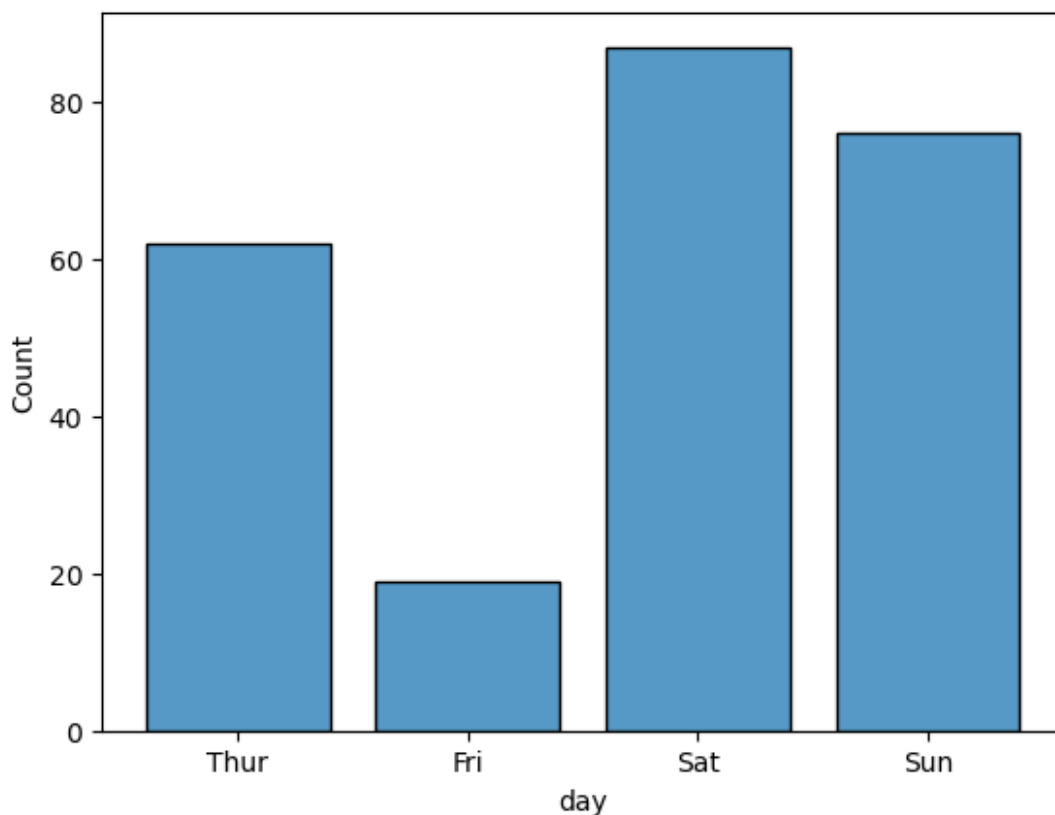
```
sns.histplot(data=tips, x="tip", stat="percent", discrete=True)
```

```
<Axes: xlabel='tip', ylabel='Percent'>
```



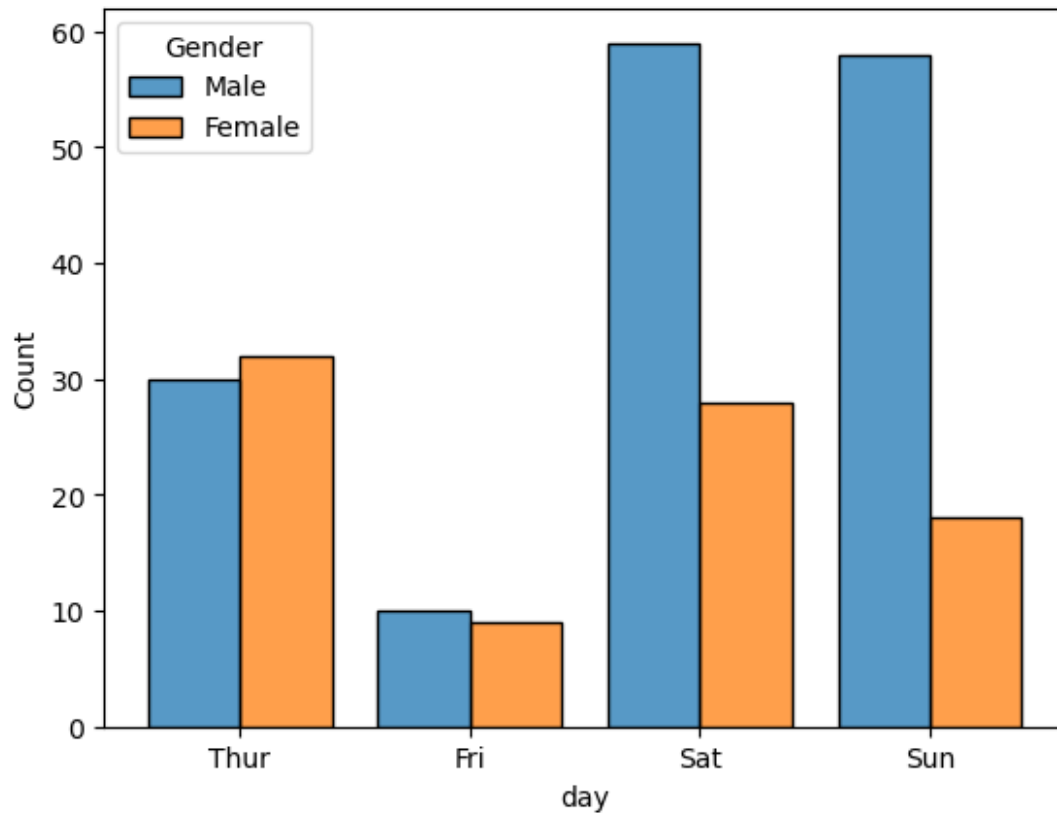
```
sns.histplot(data=tips,  
             x="day",  
             shrink=0.8)
```

```
<Axes: xlabel='day', ylabel='Count'>
```



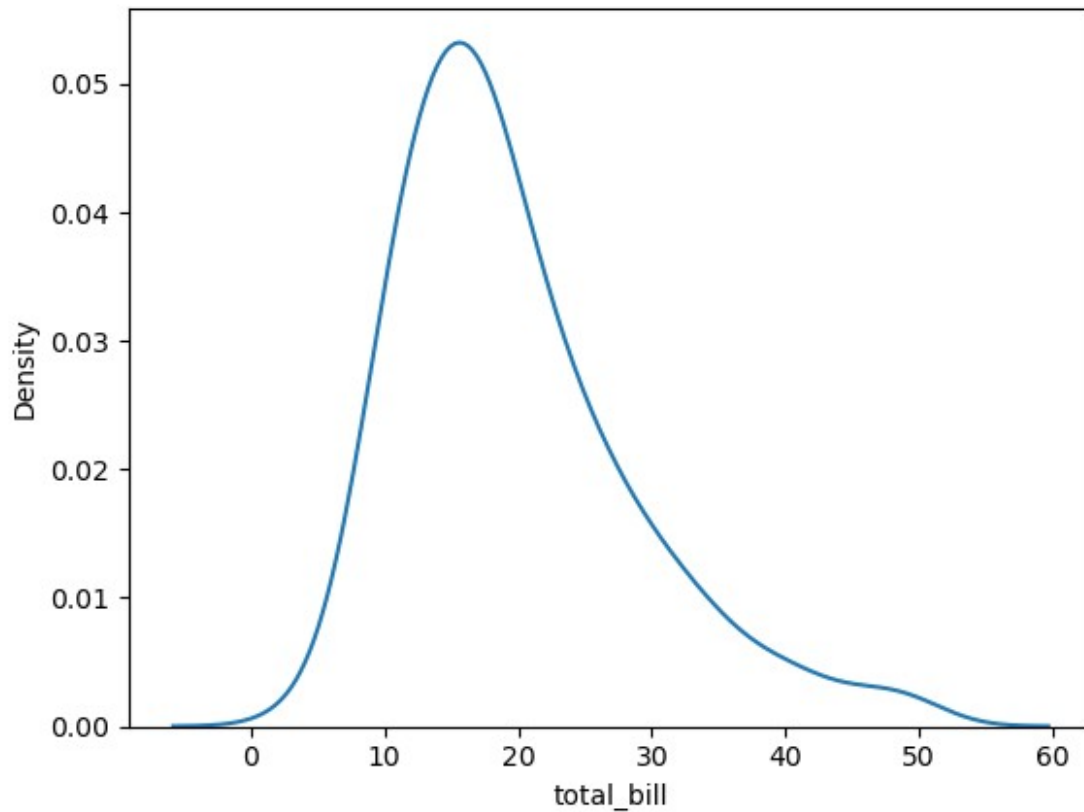
```
tips2 =tips['sex'].rename('Gender')
tips2
0      Female
1       Male
2       Male
3       Male
4      Female
...
239     Male
240    Female
241     Male
242     Male
243    Female
Name: Gender, Length: 244, dtype: category
Categories (2, object): ['Male', 'Female']

sns.histplot(data=tips,
              x ="day", hue=tips2,
              shrink=0.8, multiple="dodge")
<Axes: xlabel='day', ylabel='Count'>
```



KDE (Kernel Density Estimate)

```
tips = sns.load_dataset("tips")
sns.kdeplot(data=tips,
            x="total_bill")
<Axes: xlabel='total_bill', ylabel='Density'>
```



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

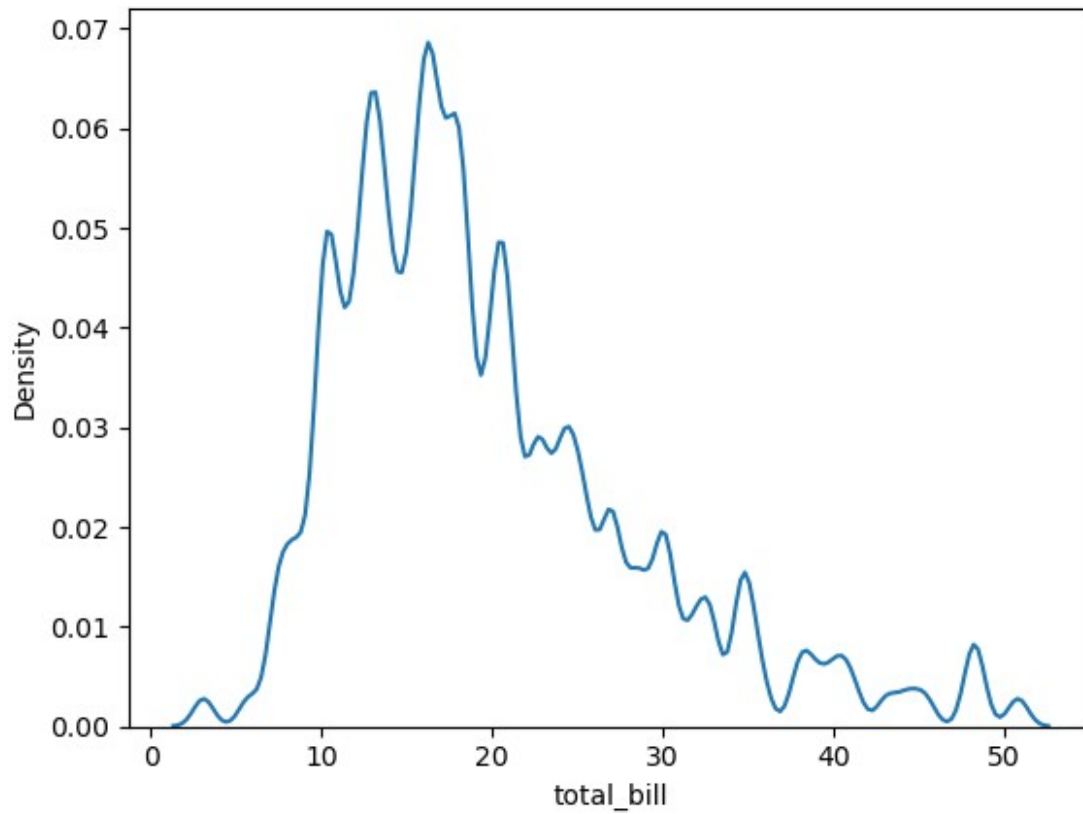
```
iris
```

	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

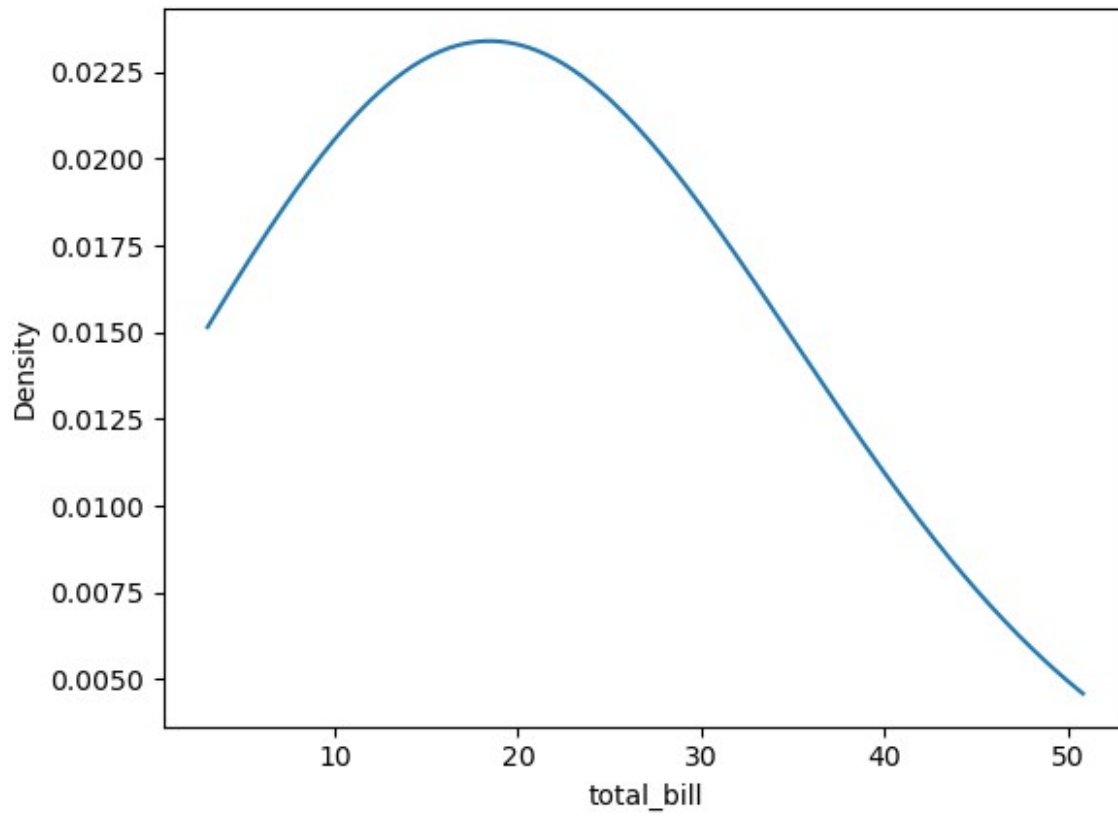
```
[150 rows x 5 columns]
```

```
sns.kdeplot(data=tips,
             x="total_bill",
             bw_adjust=0.2)
```

```
<Axes: xlabel='total_bill', ylabel='Density'>
```

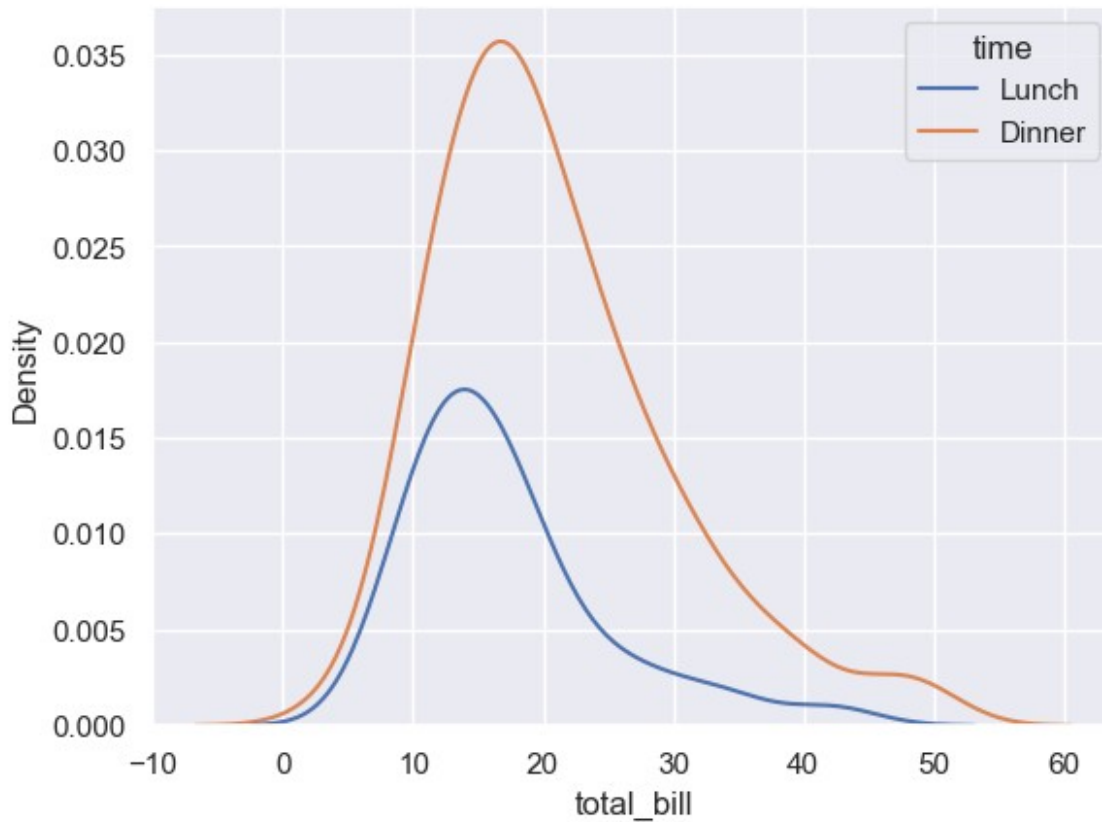



```
sns.kdeplot(data=tips,  
            x="total_bill",  
            bw_adjust=5, cut=0)  
<Axes: xlabel='total_bill', ylabel='Density'>
```



```
sns.kdeplot(data=tips,  
            x="total_bill",  
            hue="time")
```

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



Countplot

```
sns.set_theme(style="darkgrid")
```

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

```
titanic
```

	survived	pclass	sex	age	sibsp	parch	fare	embarked
class \								
0	0	3	male	22.0	1	0	7.2500	S
Third								
1	1	1	female	38.0	1	0	71.2833	C
First								
2	1	3	female	26.0	0	0	7.9250	S
Third								
3	1	1	female	35.0	1	0	53.1000	S
First								
4	0	3	male	35.0	0	0	8.0500	S
Third								
...
...								
886	0	2	male	27.0	0	0	13.0000	S

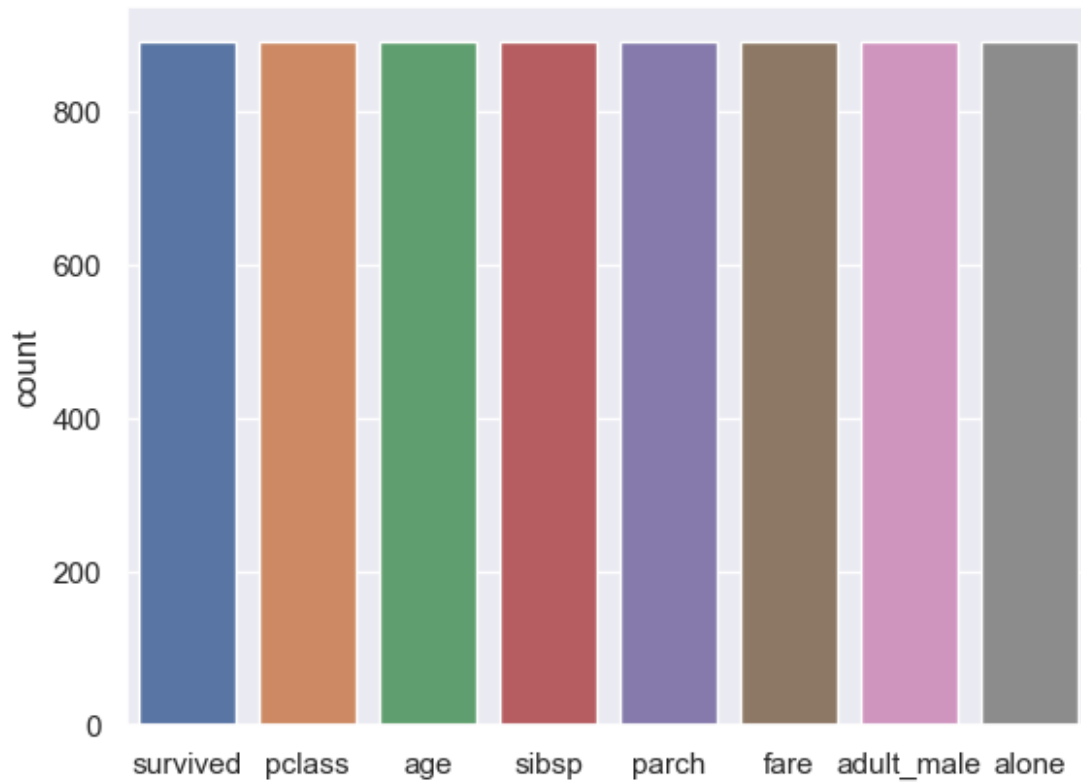
Second								
887	1	1	female	19.0	0	0	30.0000	S
First								
888	0	3	female	NaN	1	2	23.4500	S
Third								
889	1	1	male	26.0	0	0	30.0000	C
First								
890	0	3	male	32.0	0	0	7.7500	Q
Third								

	who	adult_male	deck	embark_town	alive	alone
0	man	True	NaN	Southampton	no	False
1	woman	False	C	Cherbourg	yes	False
2	woman	False	NaN	Southampton	yes	True
3	woman	False	C	Southampton	yes	False
4	man	True	NaN	Southampton	no	True
..
886	man	True	NaN	Southampton	no	True
887	woman	False	B	Southampton	yes	True
888	woman	False	NaN	Southampton	no	False
889	man	True	C	Cherbourg	yes	True
890	man	True	NaN	Queenstown	no	True

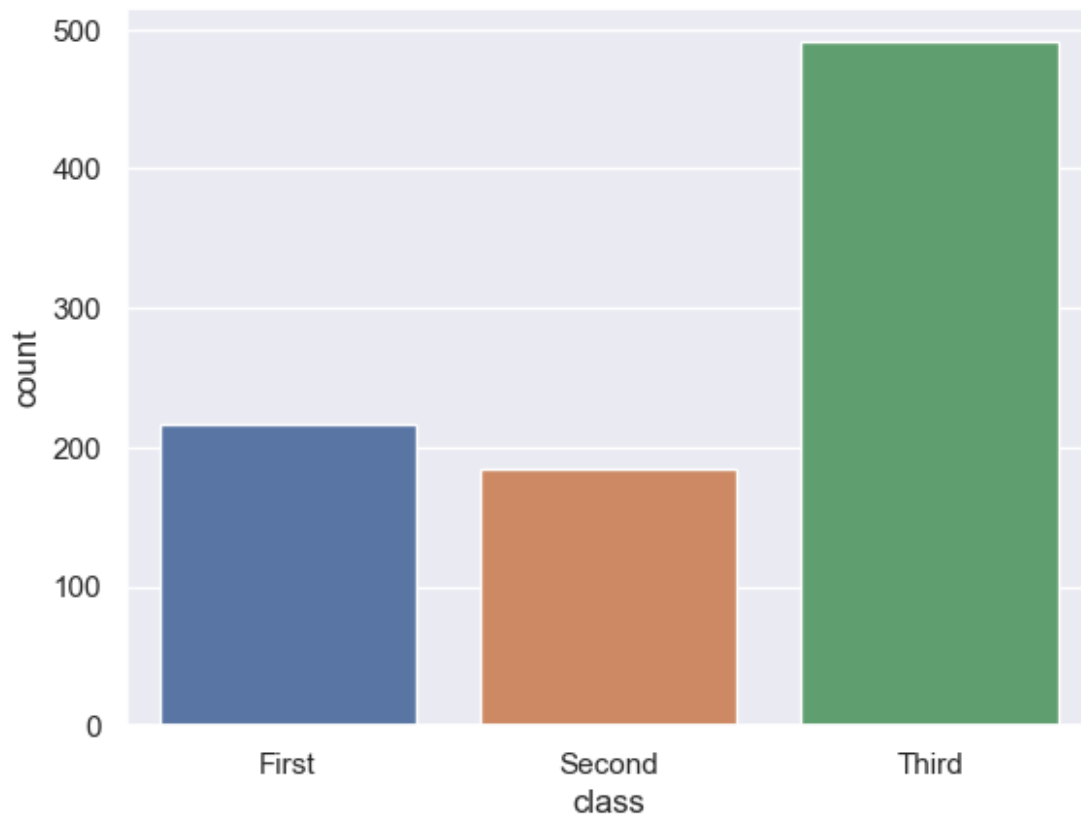
[891 rows x 15 columns]

```
sns.countplot(data=titanic)
```

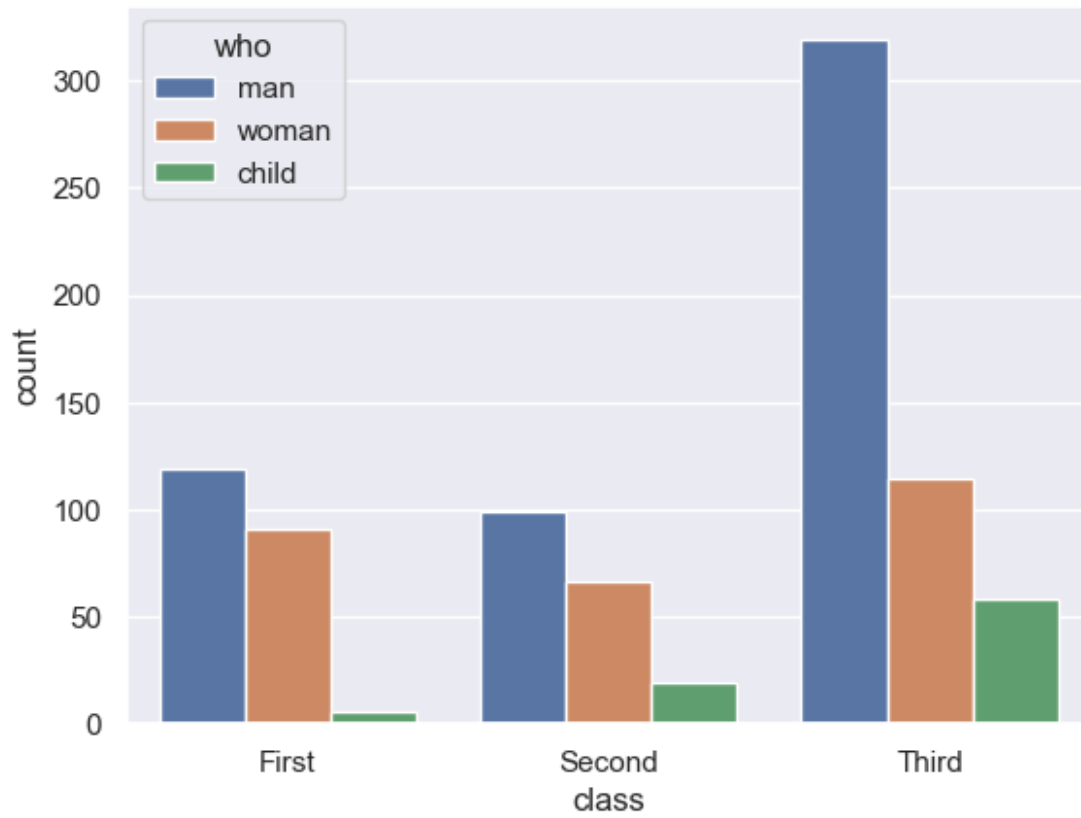
```
<Axes: ylabel='count'>
```



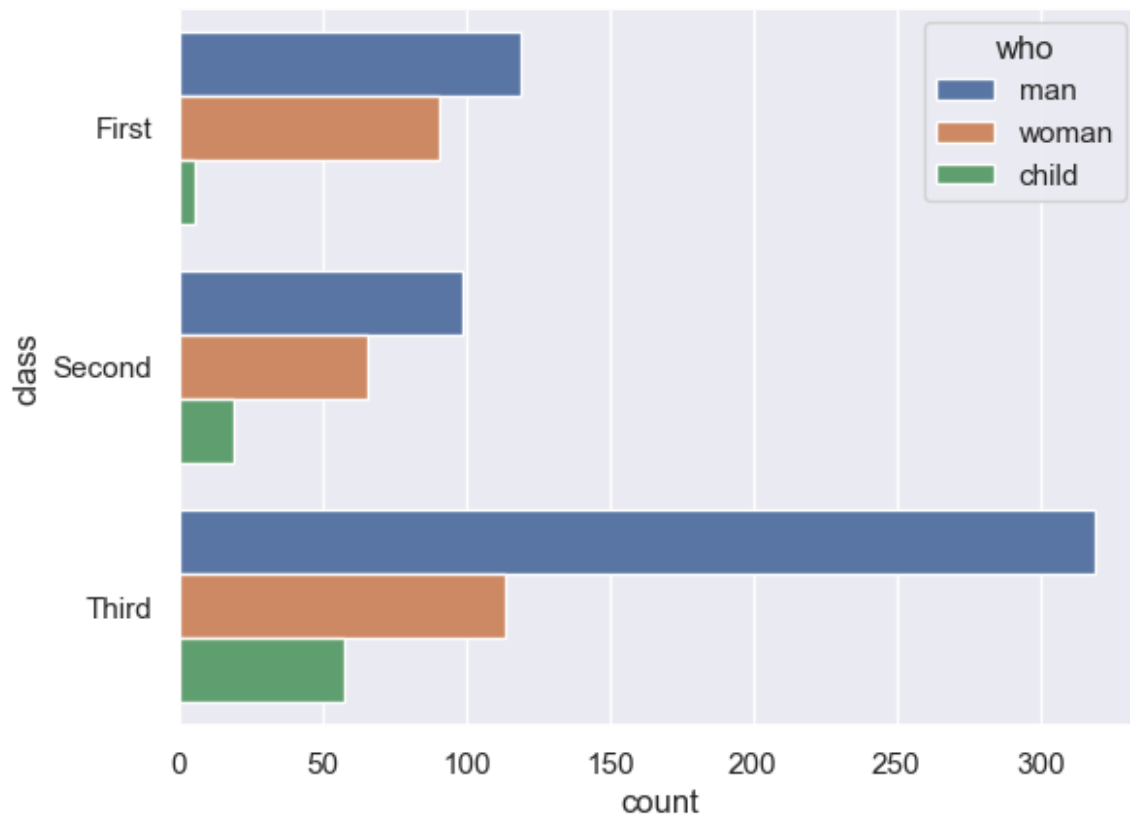
```
sns.countplot(data=titanic,  
               x="class")  
<Axes: xlabel='class', ylabel='count'>
```



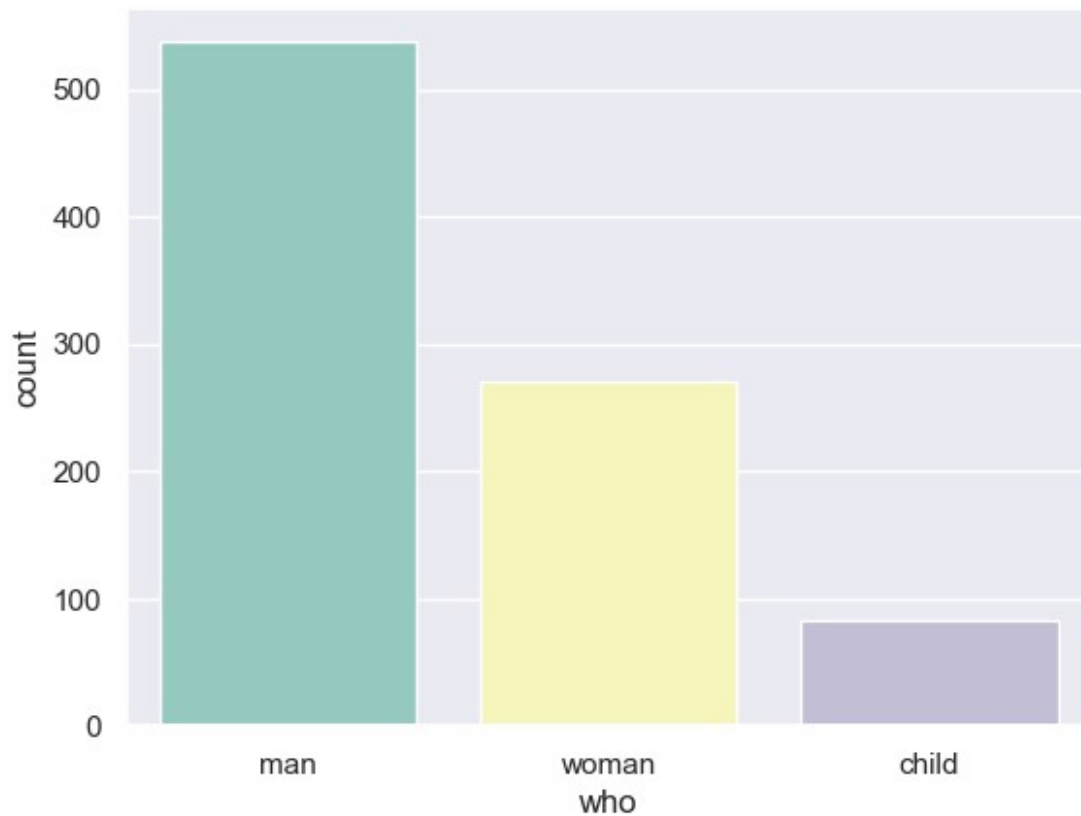
```
sns.countplot(data=titanic,  
               x="class", hue="who")  
<Axes: xlabel='class', ylabel='count'>
```



```
sns.countplot(data=titanic,  
               y="class", hue="who")  
<Axes: xlabel='count', ylabel='class'>
```



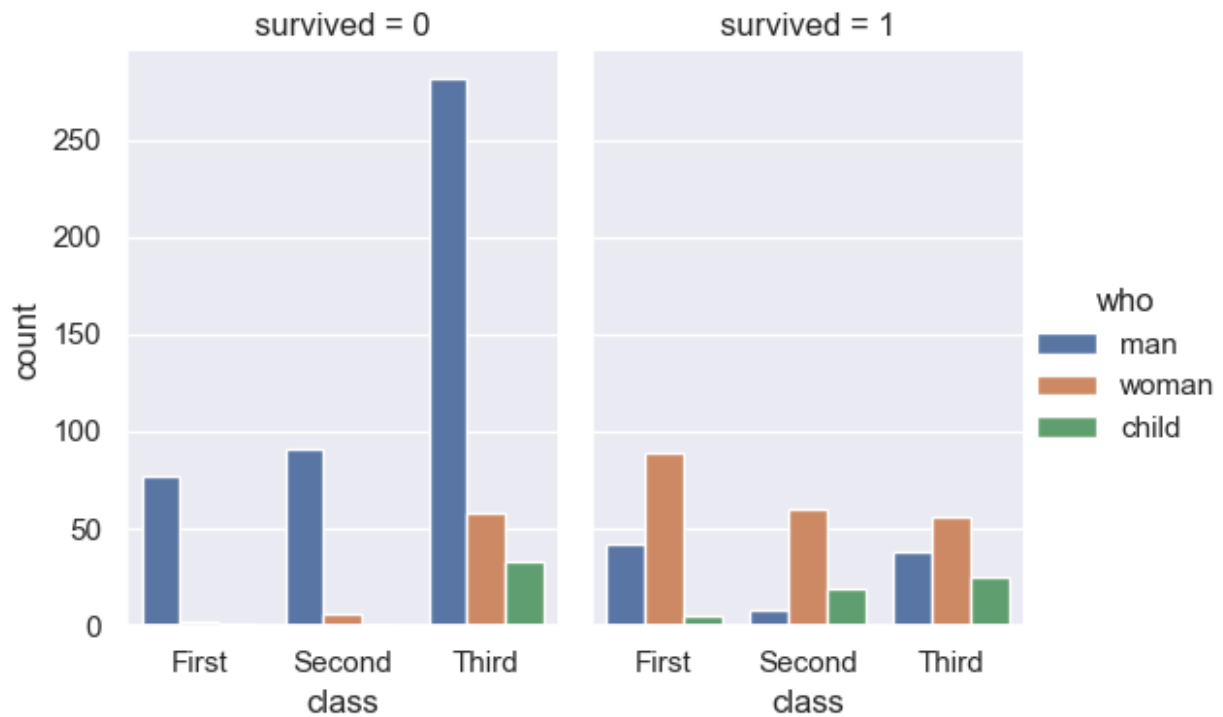
```
sns.countplot(data=titanic,  
               palette="Set3",  
               x="who")  
<Axes: xlabel='who', ylabel='count'>
```

```
sns.catplot(data=titanic, hue="who",  
            x="class", col="survived",  
            kind="count",  
            aspect=0.7, height=4)
```

```
C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:  
UserWarning: The figure layout has changed to tight  
    self._figure.tight_layout(*args, **kwargs)
```

```
<seaborn.axisgrid.FacetGrid at 0x2376c912090>
```



```
sns.set_theme(color_codes=True)
```

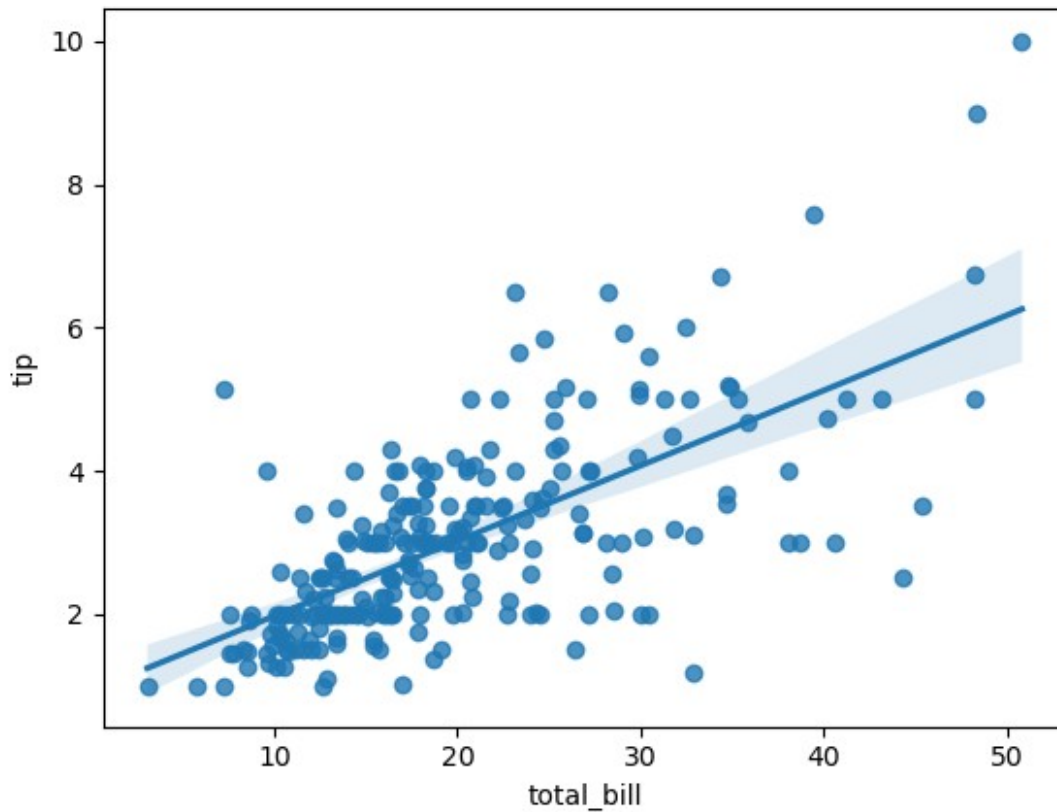
```
tips
```

	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 x 7 columns]
```

```
sns.regplot(x="total_bill",
             y="tip", data=tips)
```

```
<Axes: xlabel='total_bill', ylabel='tip'>
```



```
sns.lmplot(data=tips, x='total_bill', y="tip", row = "sex",  
col="time", height=3)
```

```
C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:
```

```
UserWarning: The figure layout has changed to tight
```

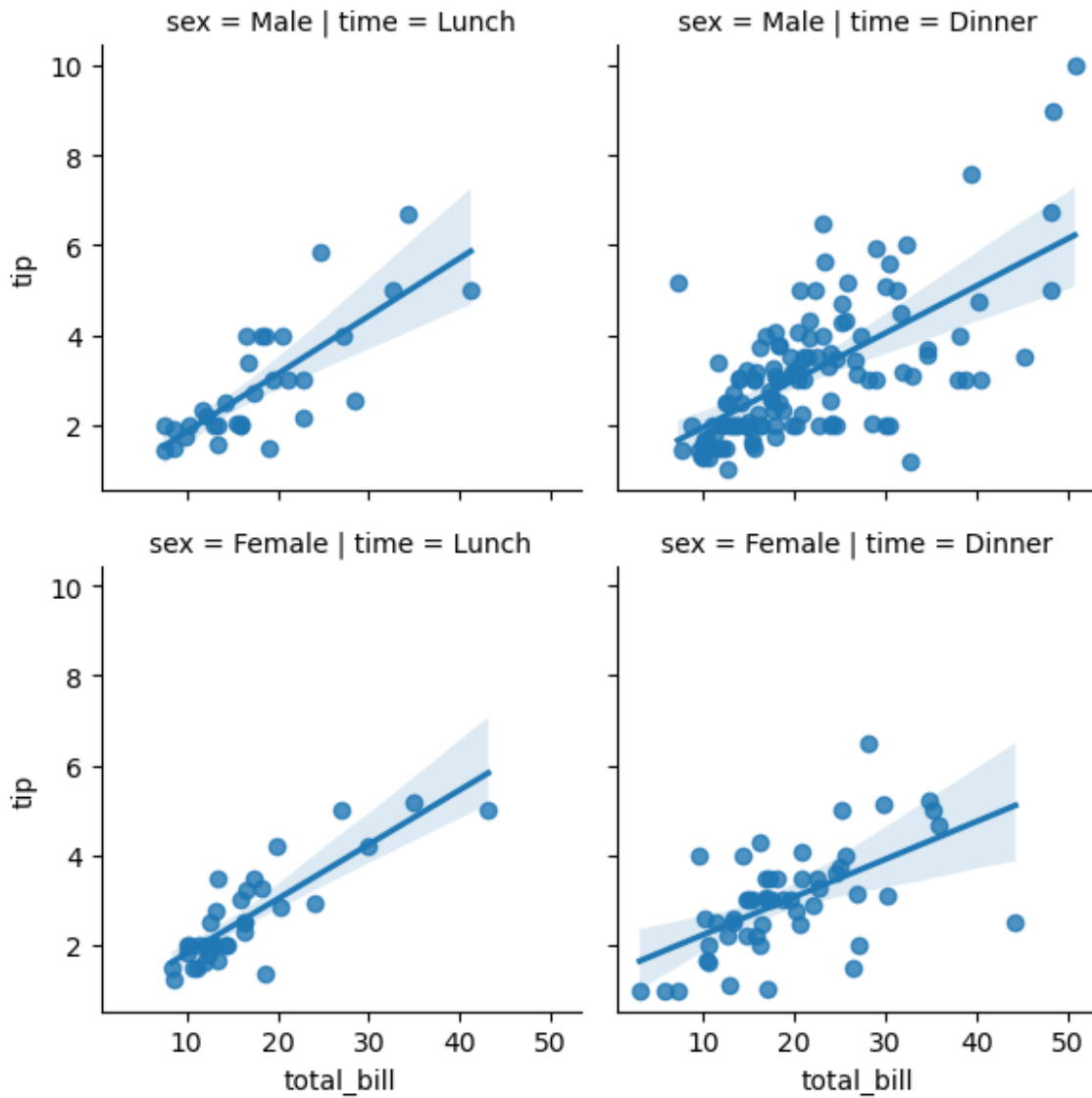
```
self._figure.tight_layout(*args, **kwargs)
```

```
C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:
```

```
UserWarning: The figure layout has changed to tight
```

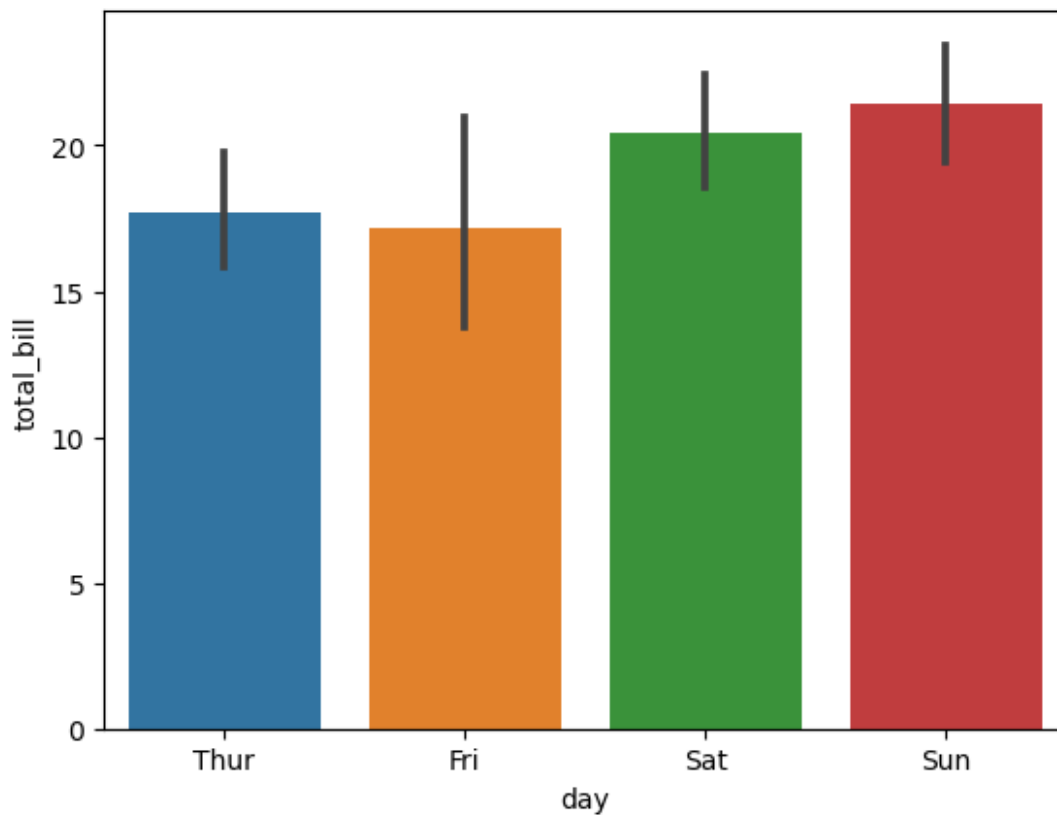
```
self._figure.tight_layout(*args, **kwargs)
```

```
<seaborn.axisgrid.FacetGrid at 0x2375dd0fcd0>
```

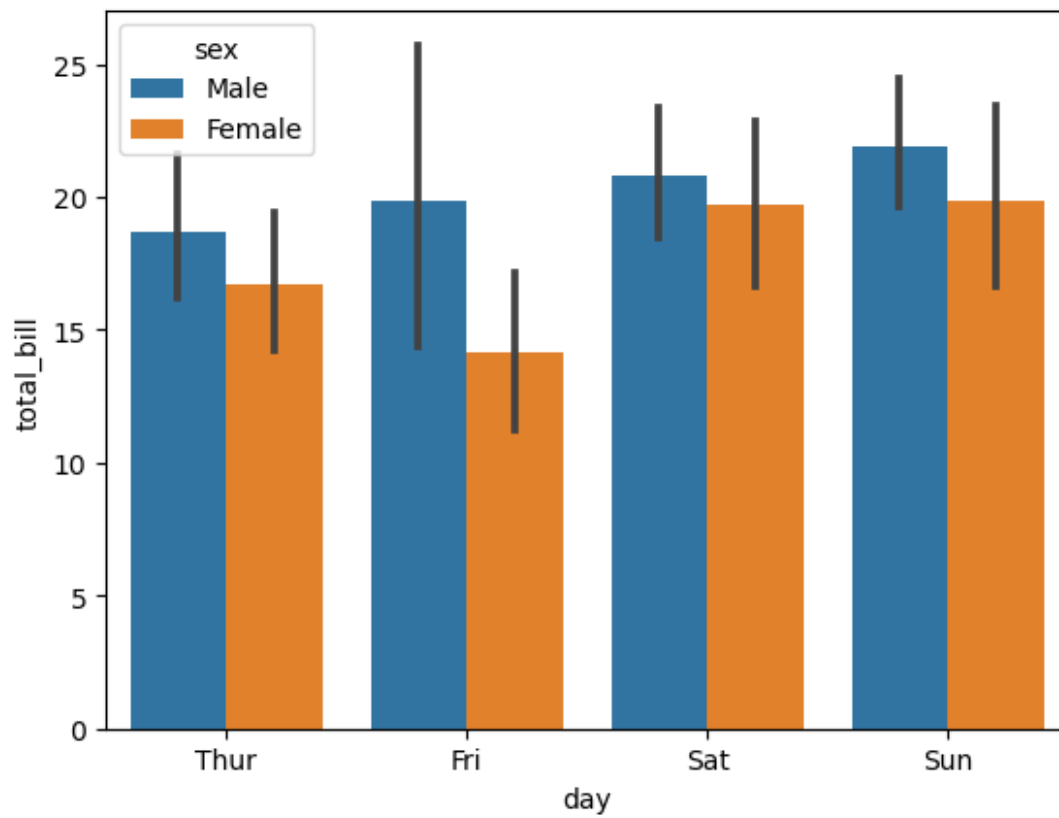


Barplots

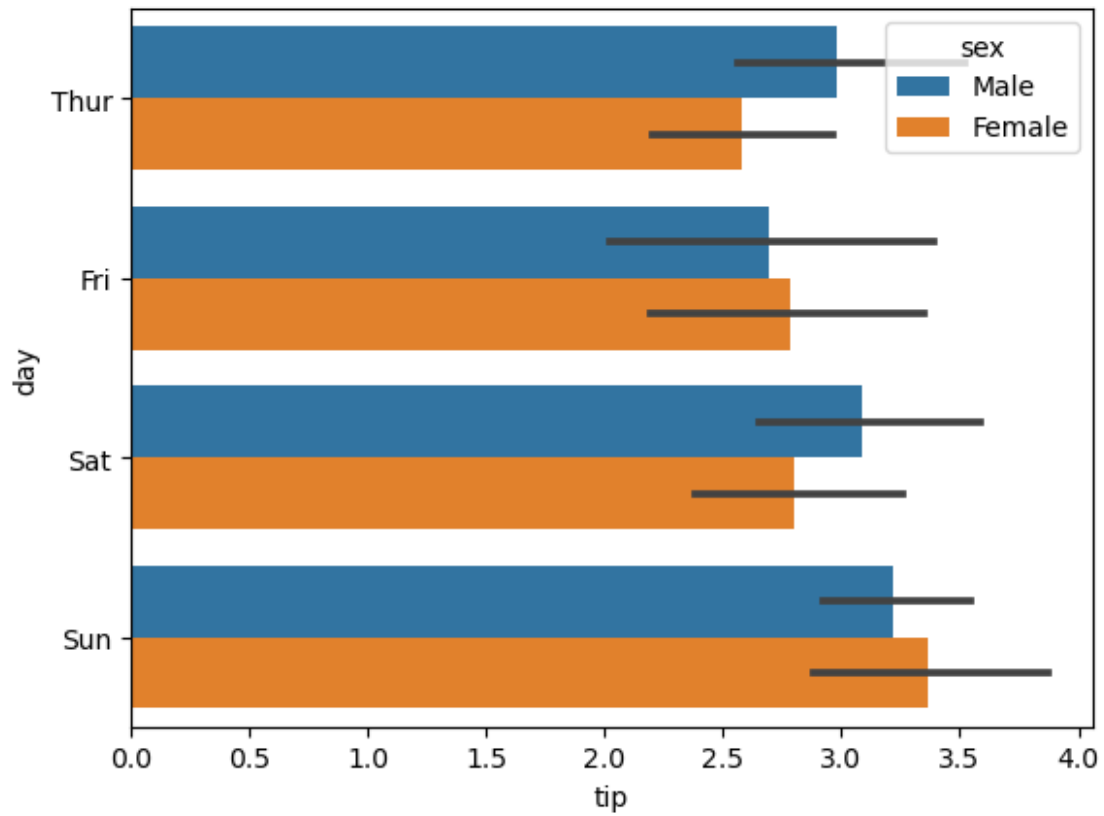
```
tips = sns.load_dataset("tips")
sns.barplot(x="day", data=tips, y="total_bill")
<Axes: xlabel='day', ylabel='total_bill'>
```



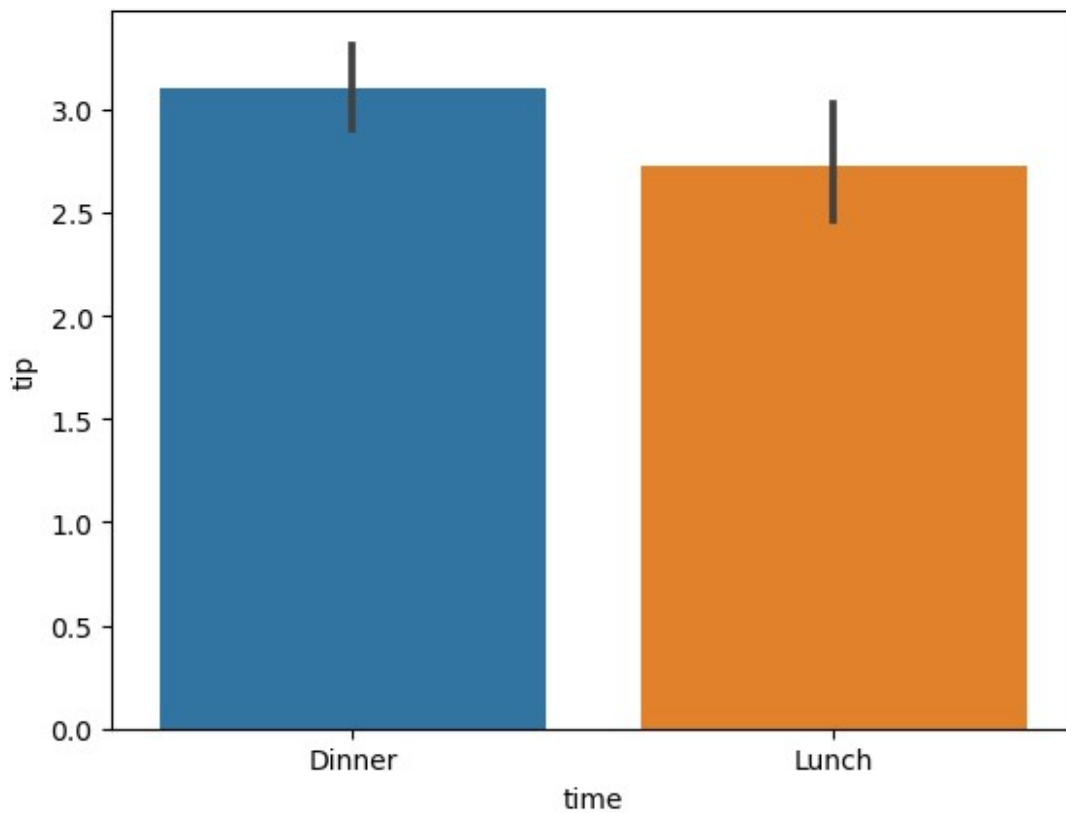
```
sns.barplot(x="day", data=tips, hue="sex", y="total_bill")  
<Axes: xlabel='day', ylabel='total_bill'>
```



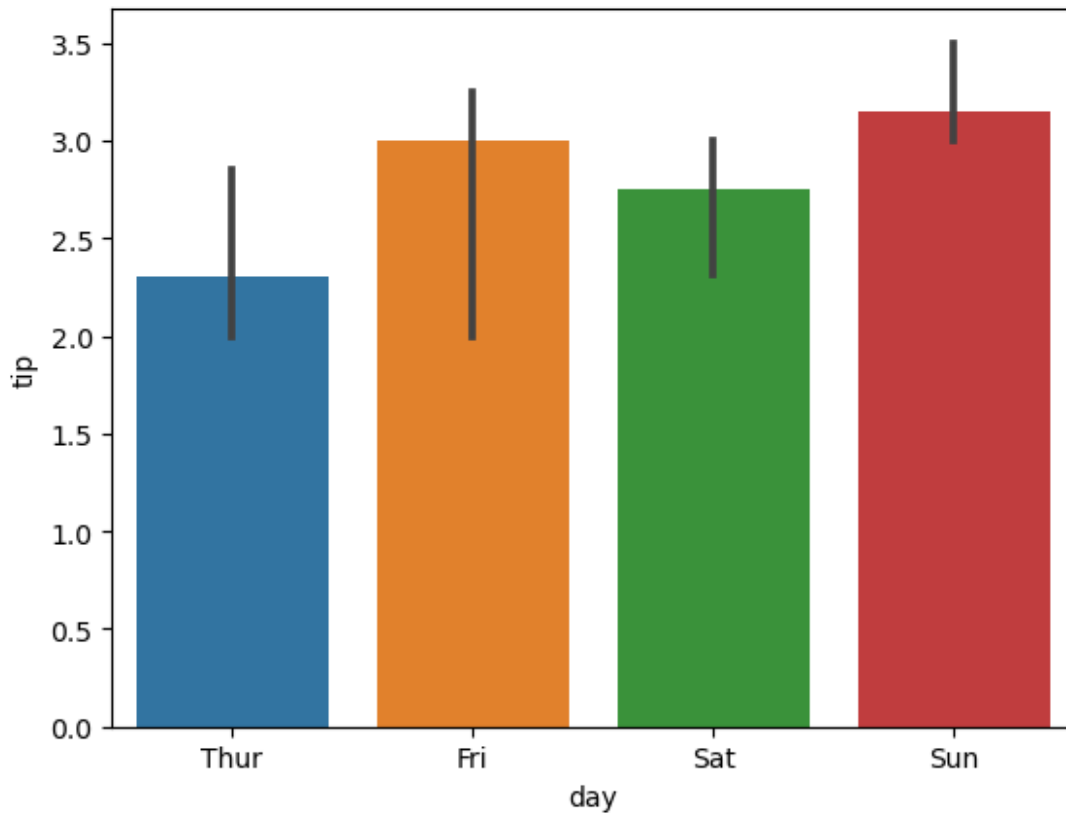
```
sns.barplot(x="tip", data=tips, hue="sex", y="day")  
<Axes: xlabel='tip', ylabel='day'>
```



```
sns.barplot(x="time", data=tips, y="tip", order=["Dinner", "Lunch"])  
<Axes: xlabel='time', ylabel='tip'>
```



```
sns.barplot(x="day", data=tips, y="tip", estimator=np.median)  
<Axes: xlabel='day', ylabel='tip'>
```

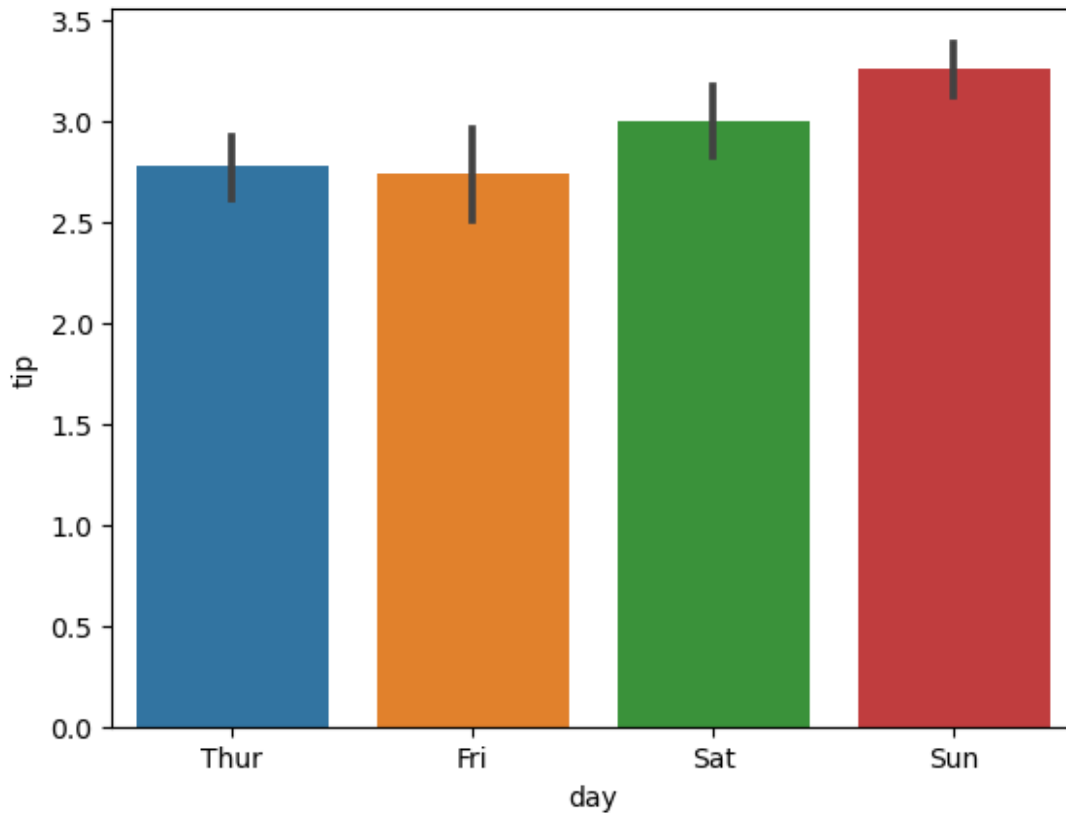
```
sns.barplot(x="day", data=tips, y="tip", ci=68)
```

C:\Users\ahmad\AppData\Local\Temp\ipykernel_3448\3720943665.py:1:
FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=('ci', 68)` for the same effect.

```
sns.barplot(x="day", data=tips, y="tip", ci=68)
```

```
<Axes: xlabel='day', ylabel='tip'>
```



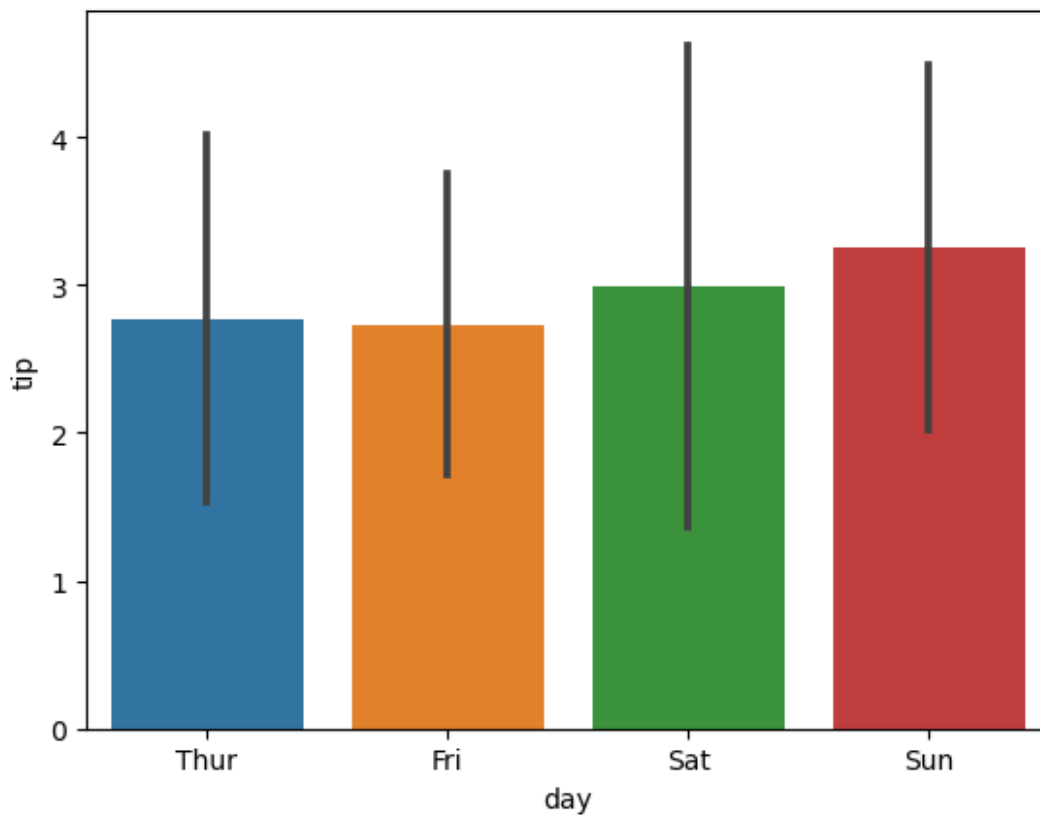
```
sns.barplot(x="day", data=tips, y="tip", ci="sd")
```

C:\Users\ahmad\AppData\Local\Temp\ipykernel_3448\3619016579.py:1:
FutureWarning:

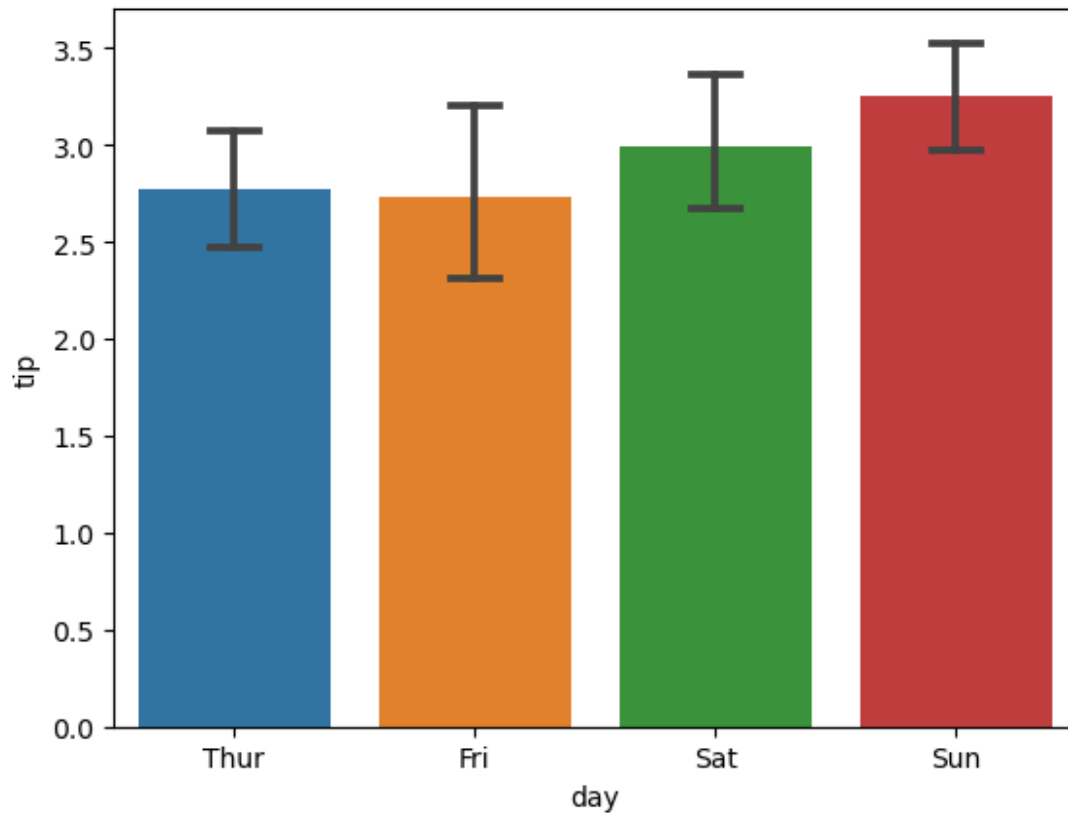
The `ci` parameter is deprecated. Use `errorbar='sd'` for the same effect.

```
sns.barplot(x="day", data=tips, y="tip", ci="sd")
```

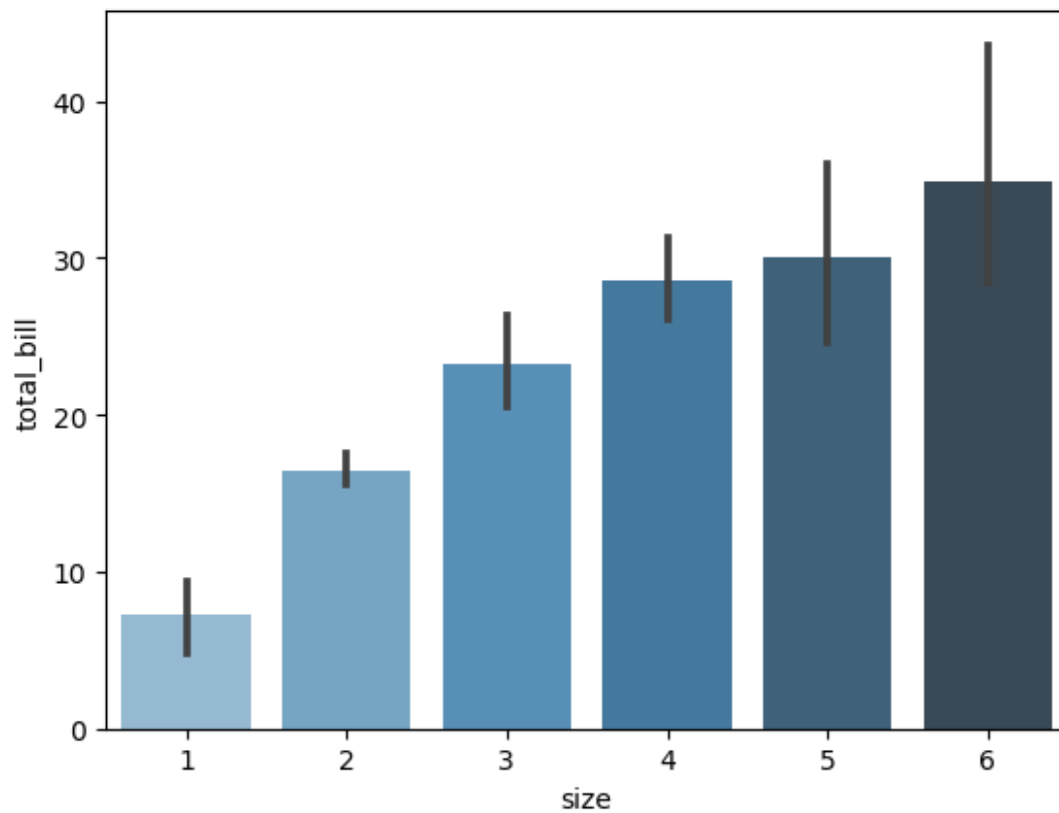
```
<Axes: xlabel='day', ylabel='tip'>
```



```
sns.barplot(x="day", data=tips, y="tip", capsize=.2)  
<Axes: xlabel='day', ylabel='tip'>
```

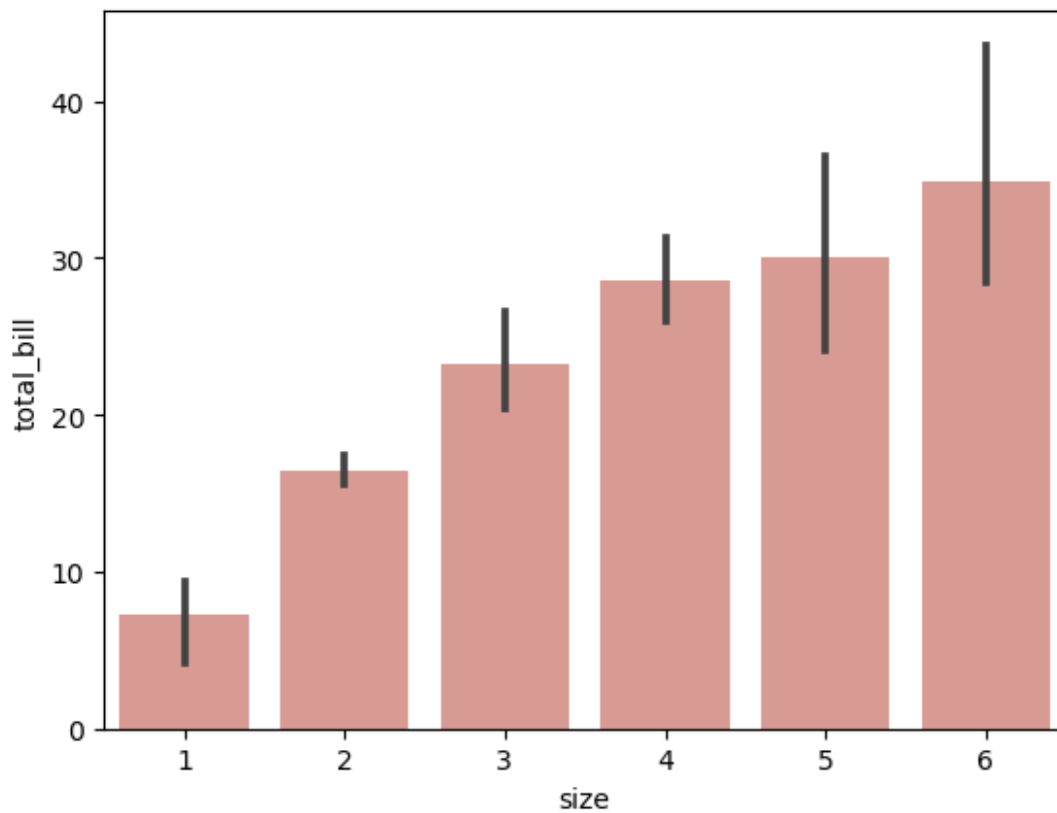


```
sns.barplot(x="size", data=tips, y="total_bill", palette="Blues_d")  
<Axes: xlabel='size', ylabel='total_bill'>
```

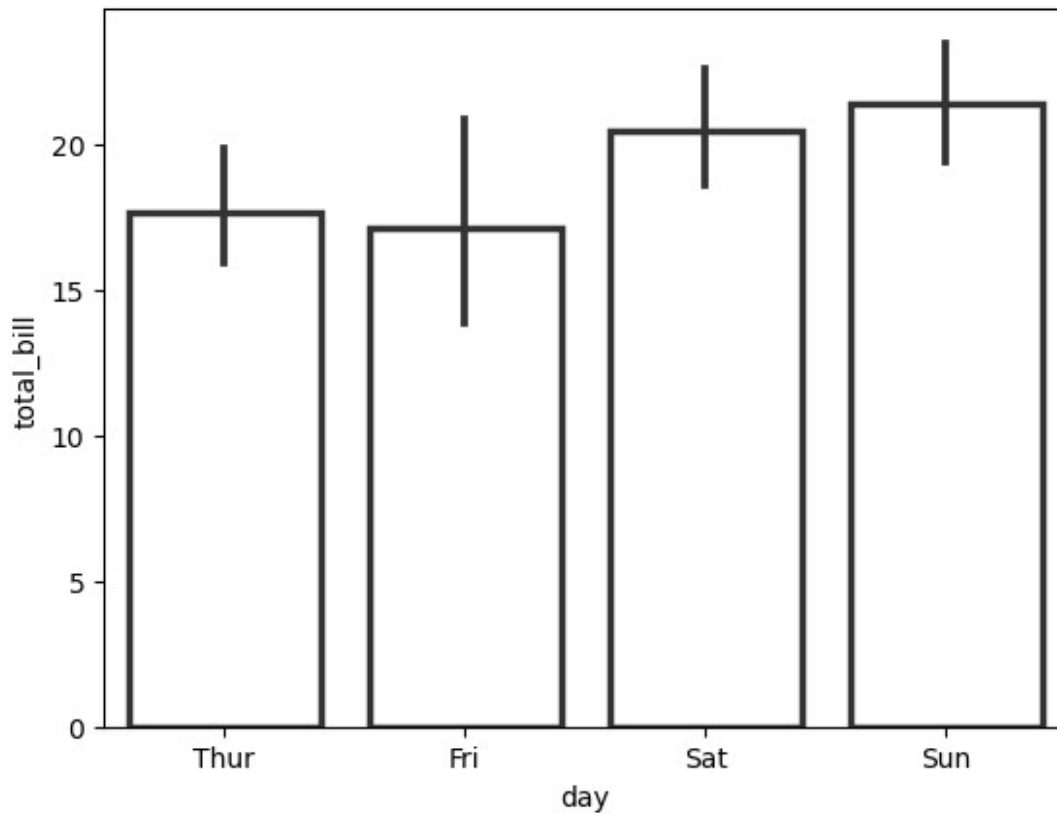


```
sns.barplot(x="size", data=tips, y="total_bill", color="salmon",  
saturation=.5)
```

```
<Axes: xlabel='size', ylabel='total_bill'>
```



```
sns.barplot(x="day", data=tips, y="total_bill",  
linewidth=2.5,facecolor=(1,1,1,0), errcolor=".2", edgecolor=".2")  
<Axes: xlabel='day', ylabel='total_bill'>
```



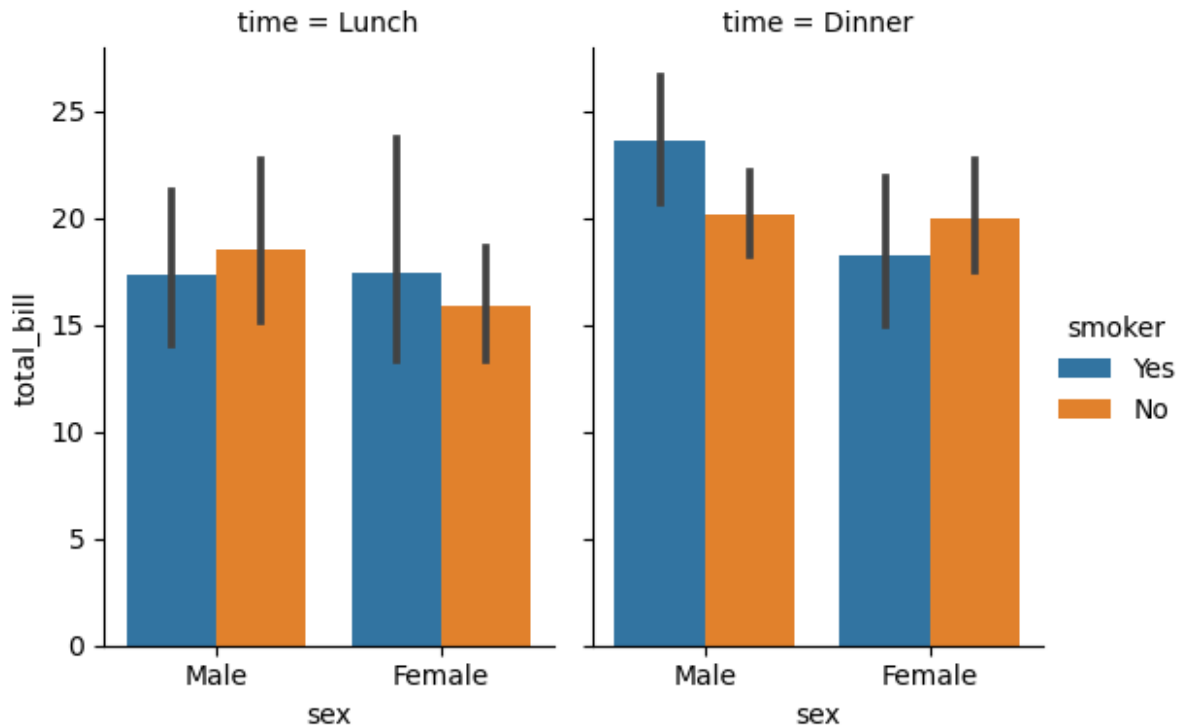
```
sns.catplot(x="sex", data=tips, y="total_bill",  
hue="smoker", col="time", kind="bar", height=4, aspect=.7)
```

C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:

UserWarning: The figure layout has changed to tight

```
self._figure.tight_layout(*args, **kwargs)
```

<seaborn.axisgrid.FacetGrid at 0x23767aec490>



Pairplot

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

```
penguins
```

	species	island	bill_length_mm	bill_depth_mm
0	Adelie	Torgersen	39.1	18.7
1	Adelie	Torgersen	39.5	17.4
2	Adelie	Torgersen	40.3	18.0
3	Adelie	Torgersen	NaN	NaN
4	Adelie	Torgersen	36.7	19.3
...
339	Gentoo	Biscoe	NaN	NaN
340	Gentoo	Biscoe	46.8	14.3
341	Gentoo	Biscoe	50.4	15.7

342	Gentoo	Biscoe	45.2	14.8
212.0				
343	Gentoo	Biscoe	49.9	16.1
213.0				

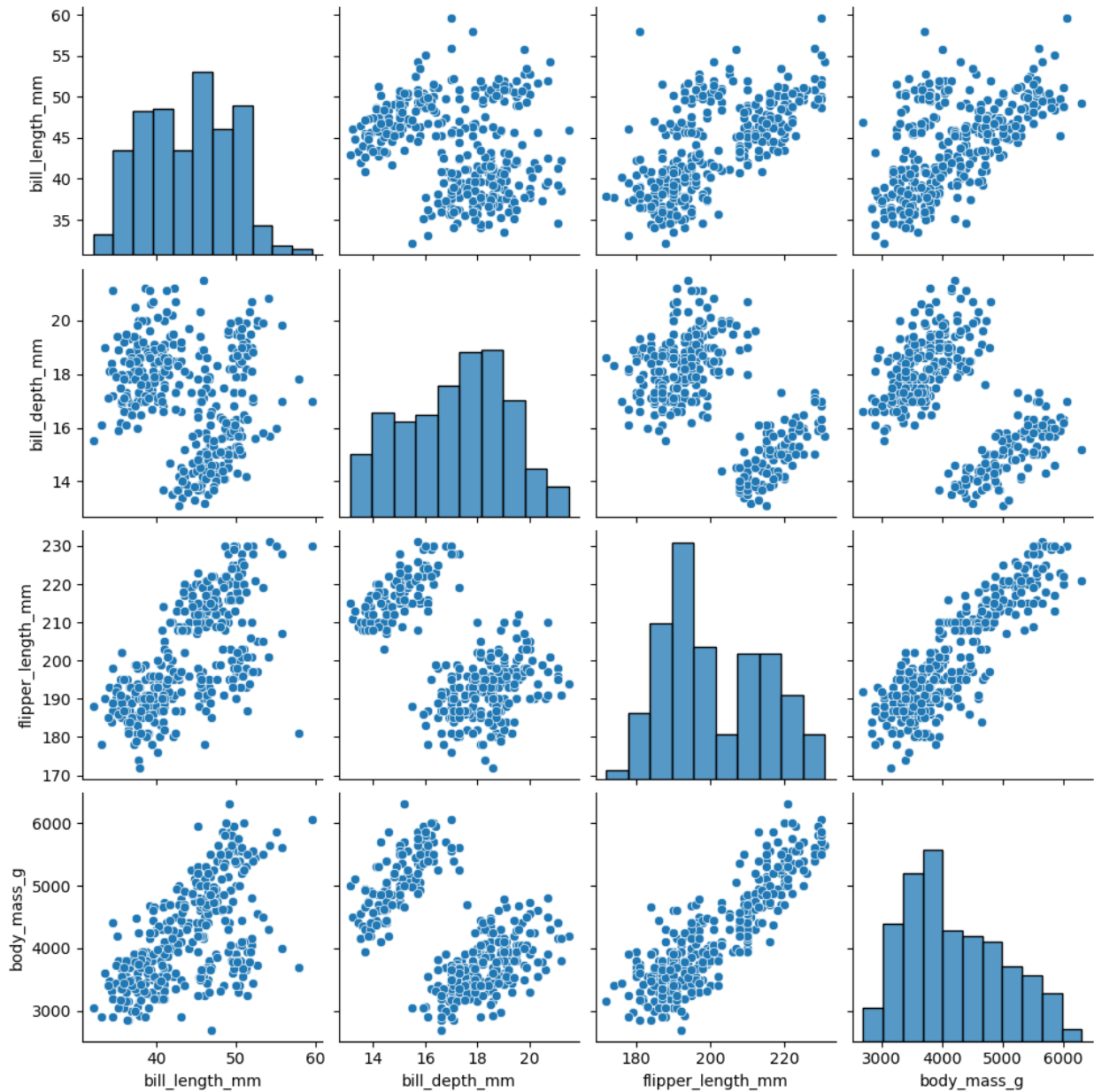
	body_mass_g	sex
0	3750.0	Male
1	3800.0	Female
2	3250.0	Female
3	NaN	NaN
4	3450.0	Female
..
339	NaN	NaN
340	4850.0	Female
341	5750.0	Male
342	5200.0	Female
343	5400.0	Male

[344 rows x 7 columns]

sns.pairplot(penguins)

C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:
 UserWarning: The figure layout has changed to tight
 self._figure.tight_layout(*args, **kwargs)

<seaborn.axisgrid.PairGrid at 0x237634a40d0>



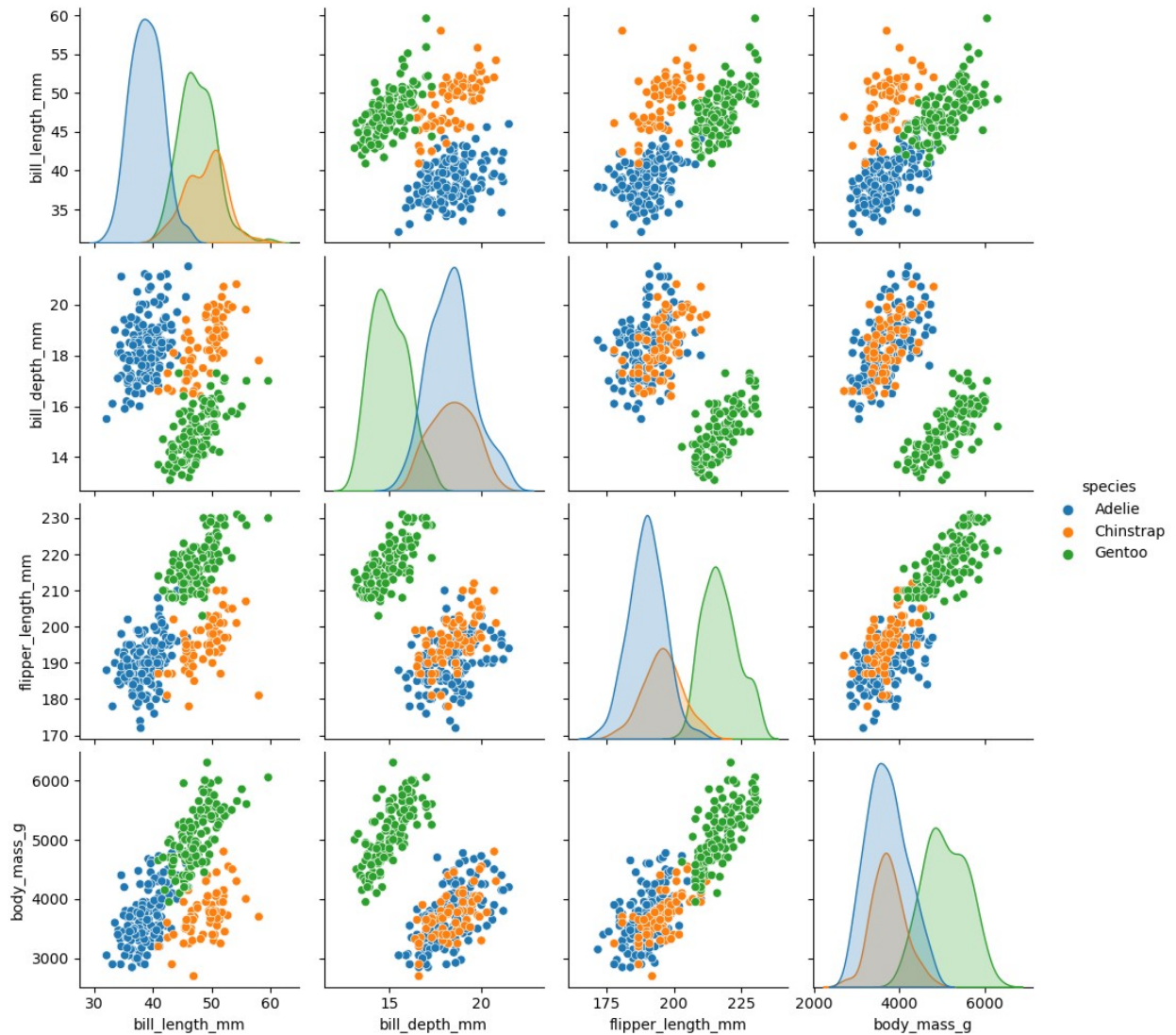
```
sns.pairplot(penguins, hue="species")
```

C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:

UserWarning: The figure layout has changed to tight

```
self._figure.tight_layout(*args, **kwargs)
```

```
<seaborn.axisgrid.PairGrid at 0x23762c491d0>
```



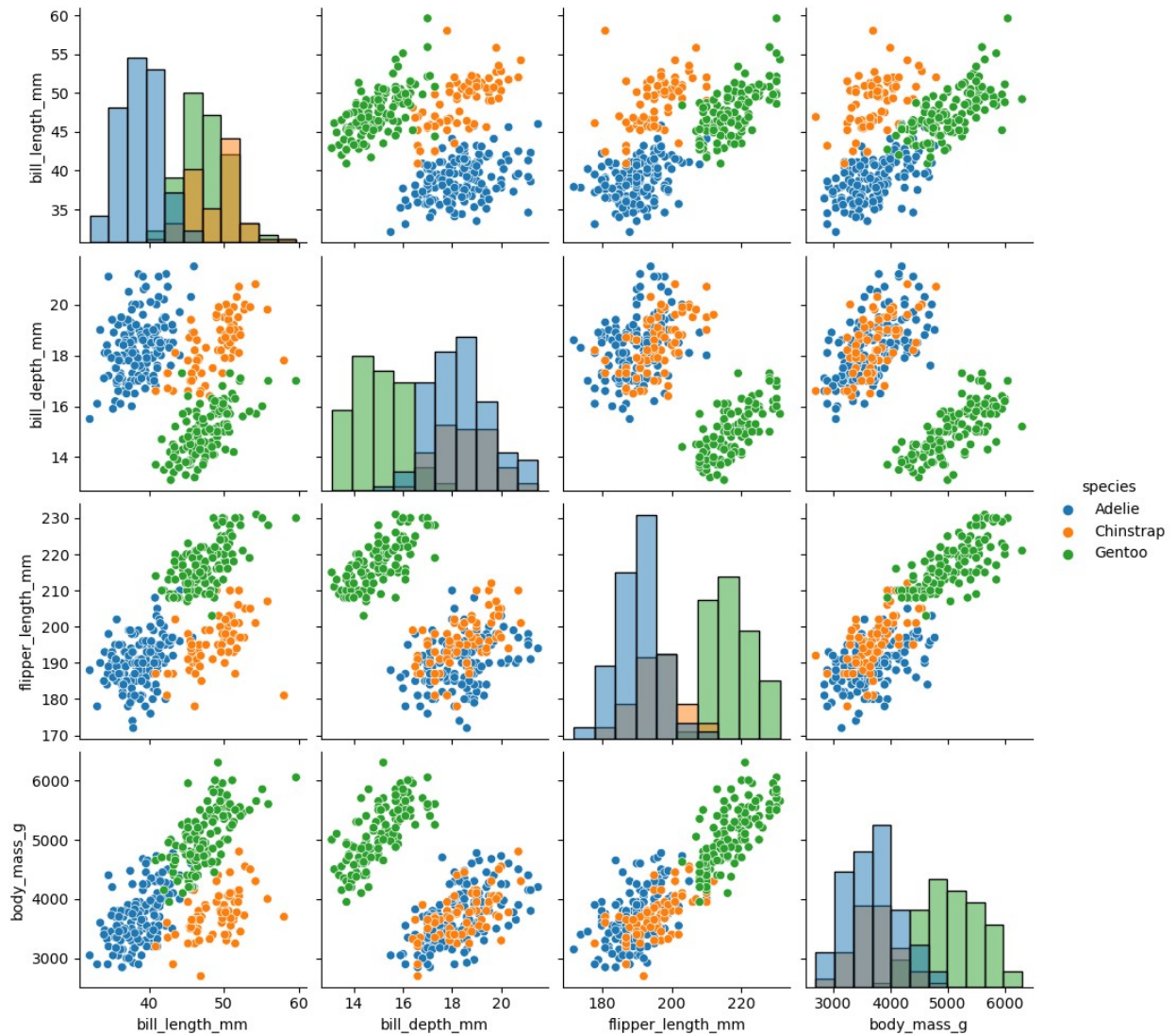
```
sns.pairplot(penguins, hue="species", diag_kind="hist")
```

C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:

UserWarning: The figure layout has changed to tight

```
self._figure.tight_layout(*args, **kwargs)
```

```
<seaborn.axisgrid.PairGrid at 0x23761afe650>
```



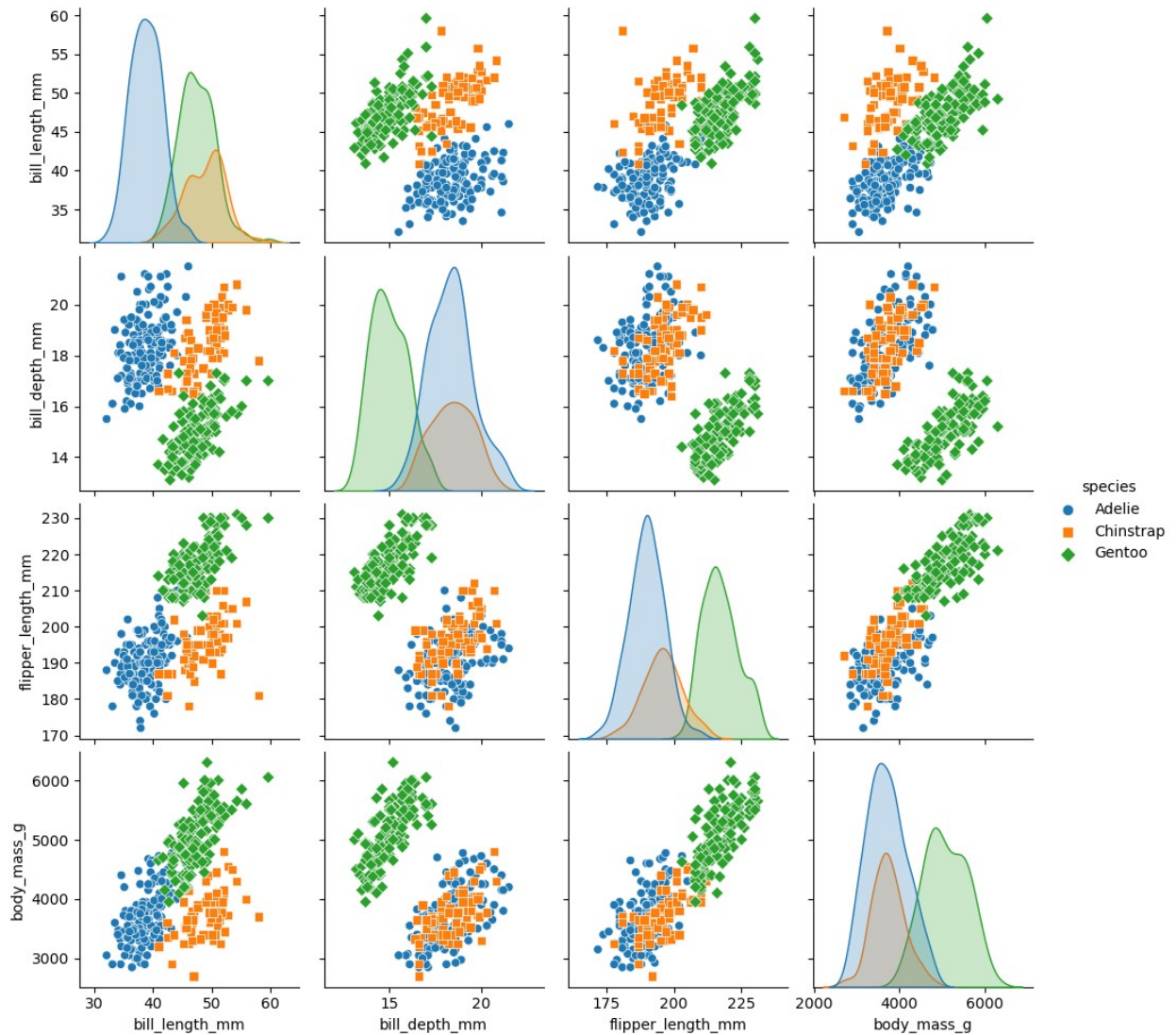
```
sns.pairplot(penguins, hue="species", markers=["o", "s", "D"])
```

C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:

UserWarning: The figure layout has changed to tight

```
self._figure.tight_layout(*args, **kwargs)
```

<seaborn.axisgrid.PairGrid at 0x2374c3411d0>



```
sns.pairplot(penguins, height=1.5)
```

```
C:\Users\ahmad\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118:
```

```
UserWarning: The figure layout has changed to tight
```

```
self._figure.tight_layout(*args, **kwargs)
```

```
<seaborn.axisgrid.PairGrid at 0x2375e85a4d0>
```