Seaborn

May 1, 2023

1 Distribution plots

[1]:
```
import seaborn as sns
import matplotlib.pyplot as plt
```

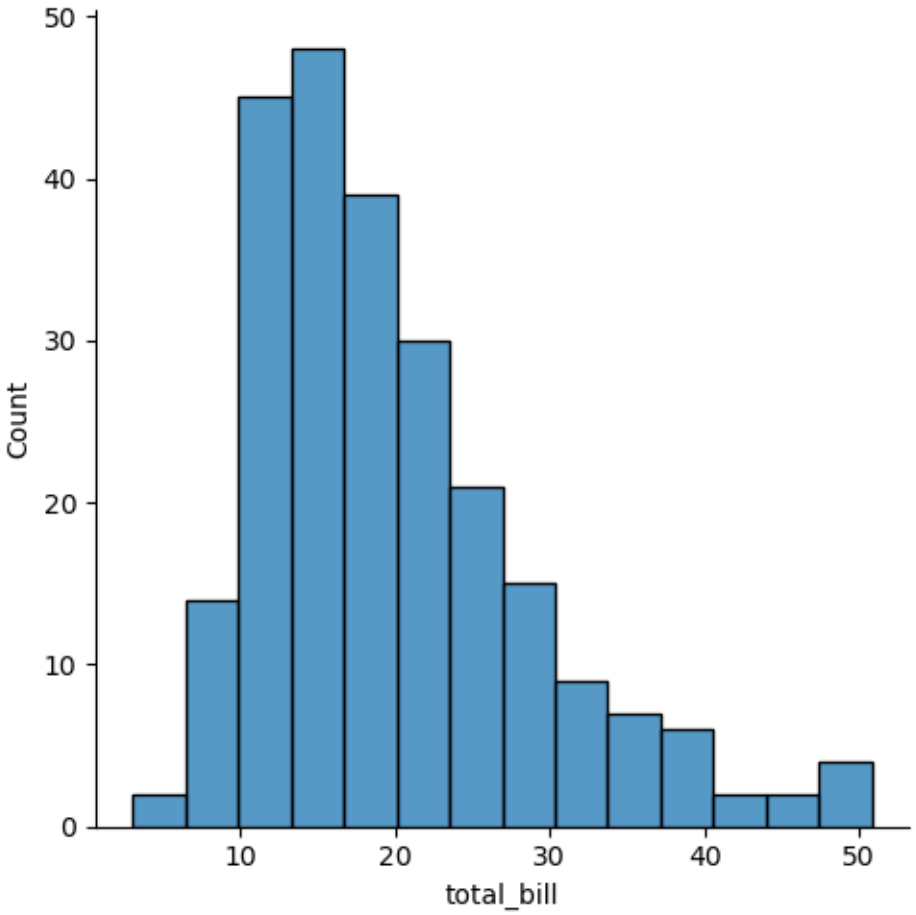
[2]:
```
tips = sns.load_dataset('tips')
```

[3]:
```
tips.head()
```

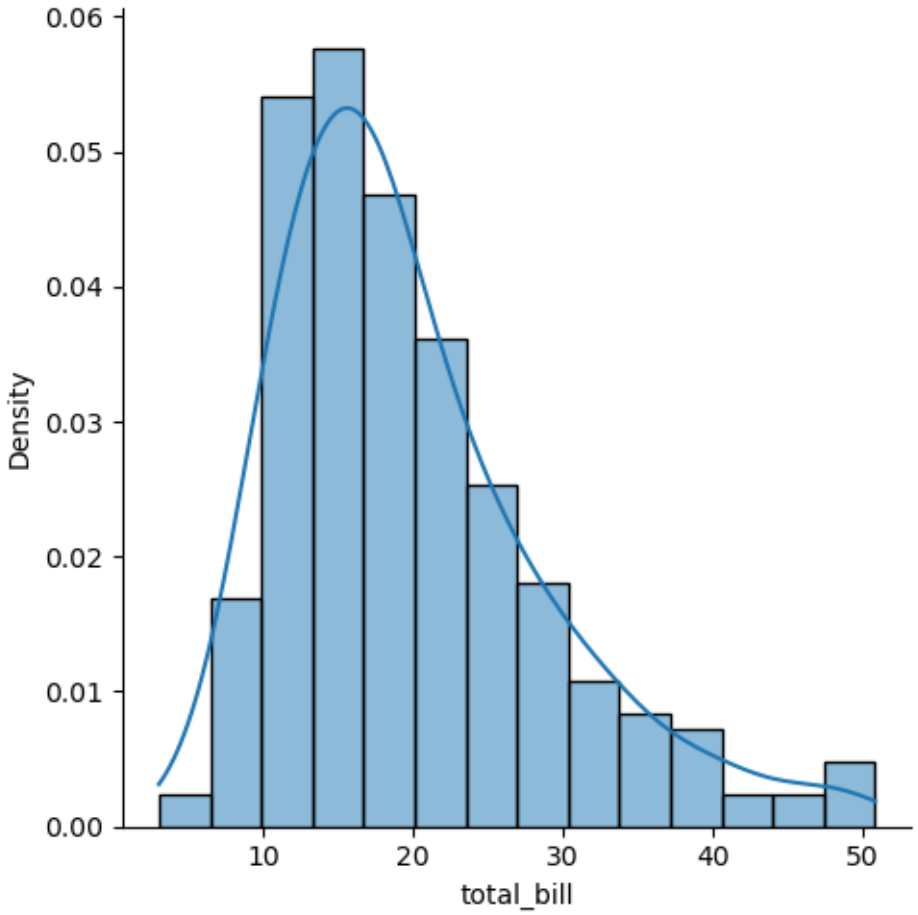
[3]:

	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

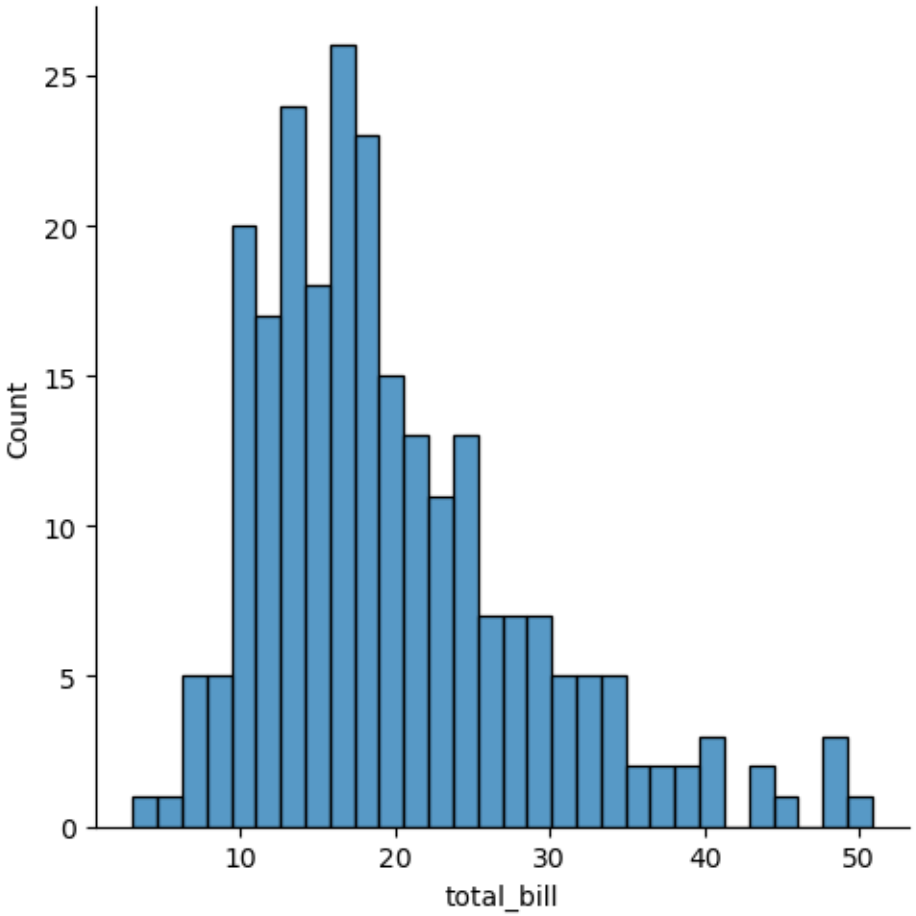
[4]:
```
sns.displot(tips.total_bill)
plt.show()
```



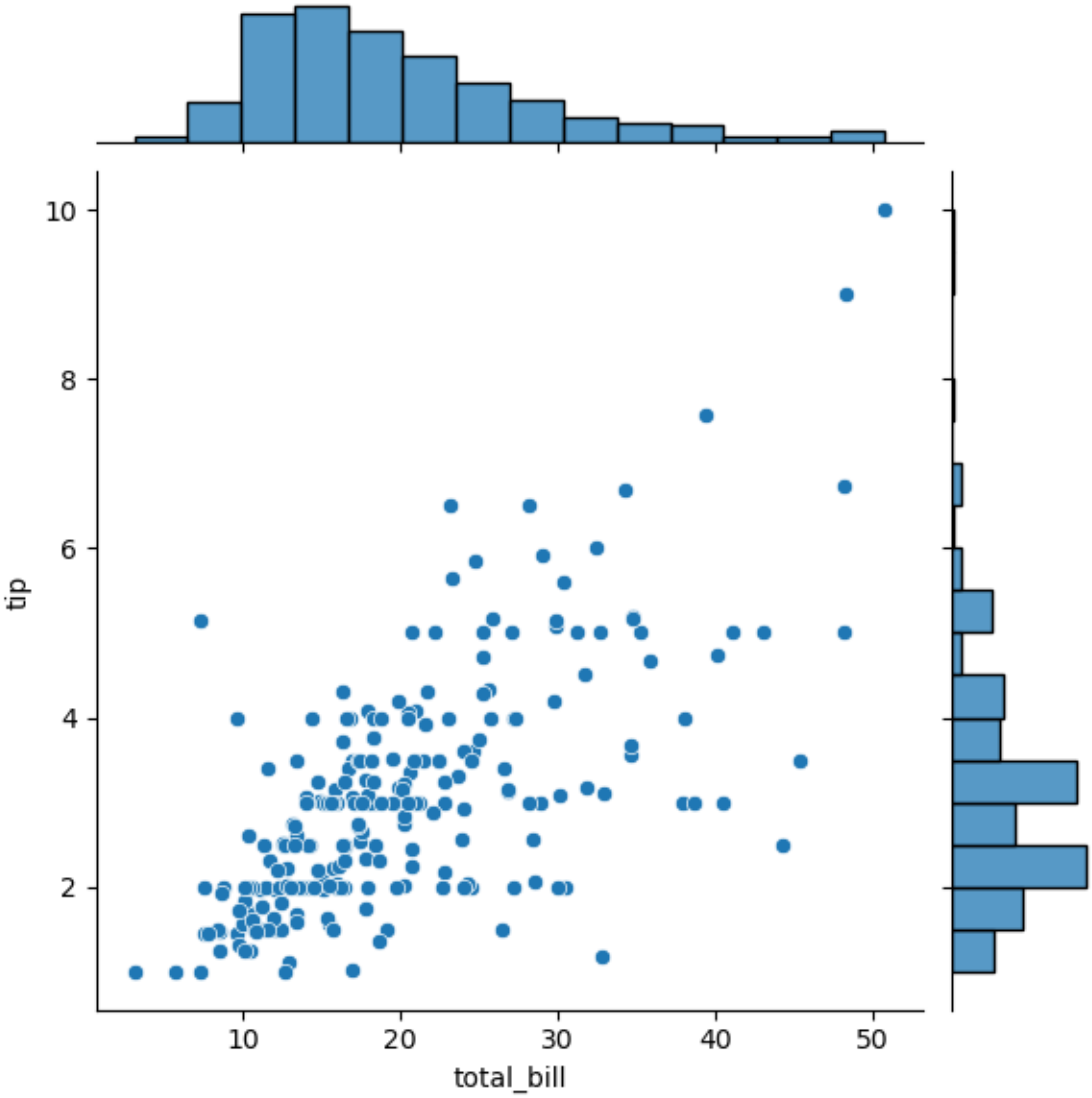
[5]:
```
sns.displot(tips.total_bill, stat = 'density', kde = True)
plt.show()
```



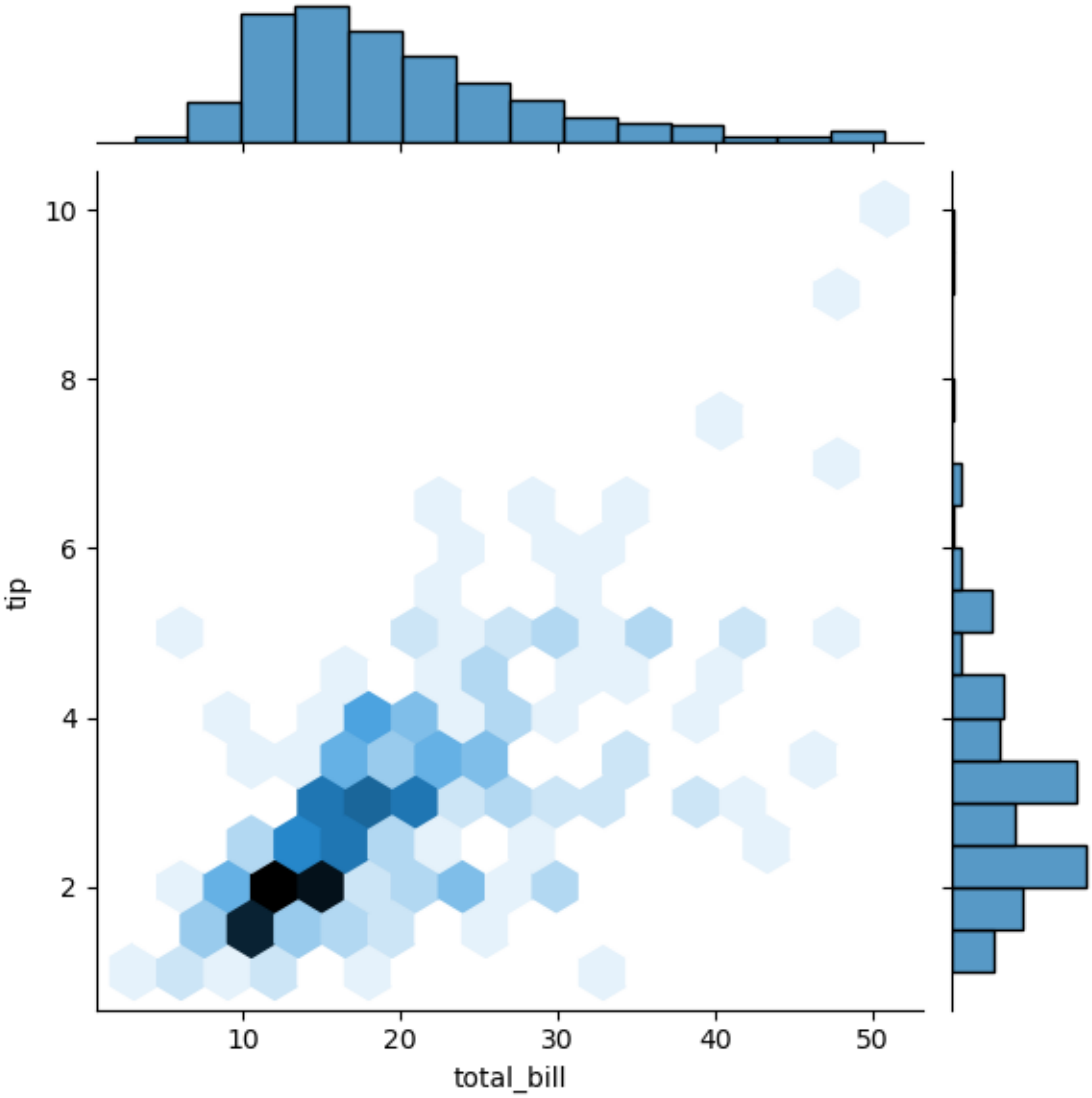
[6]:
```
sns.displot(tips.total_bill, bins = 30)
plt.show()
```



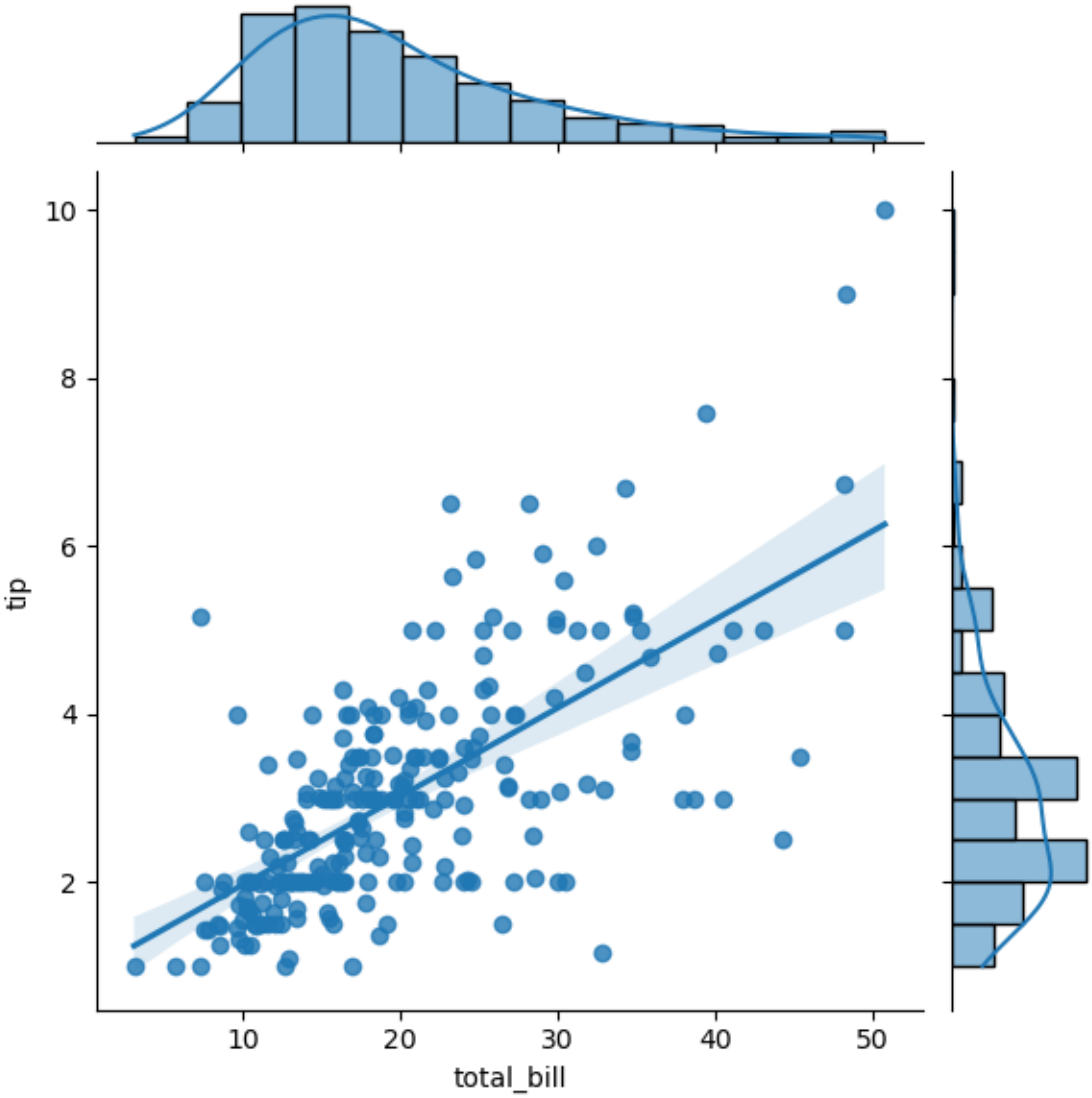
[7]:
```
sns.jointplot(x = 'total_bill', y = 'tip', data = tips)
plt.show()
```



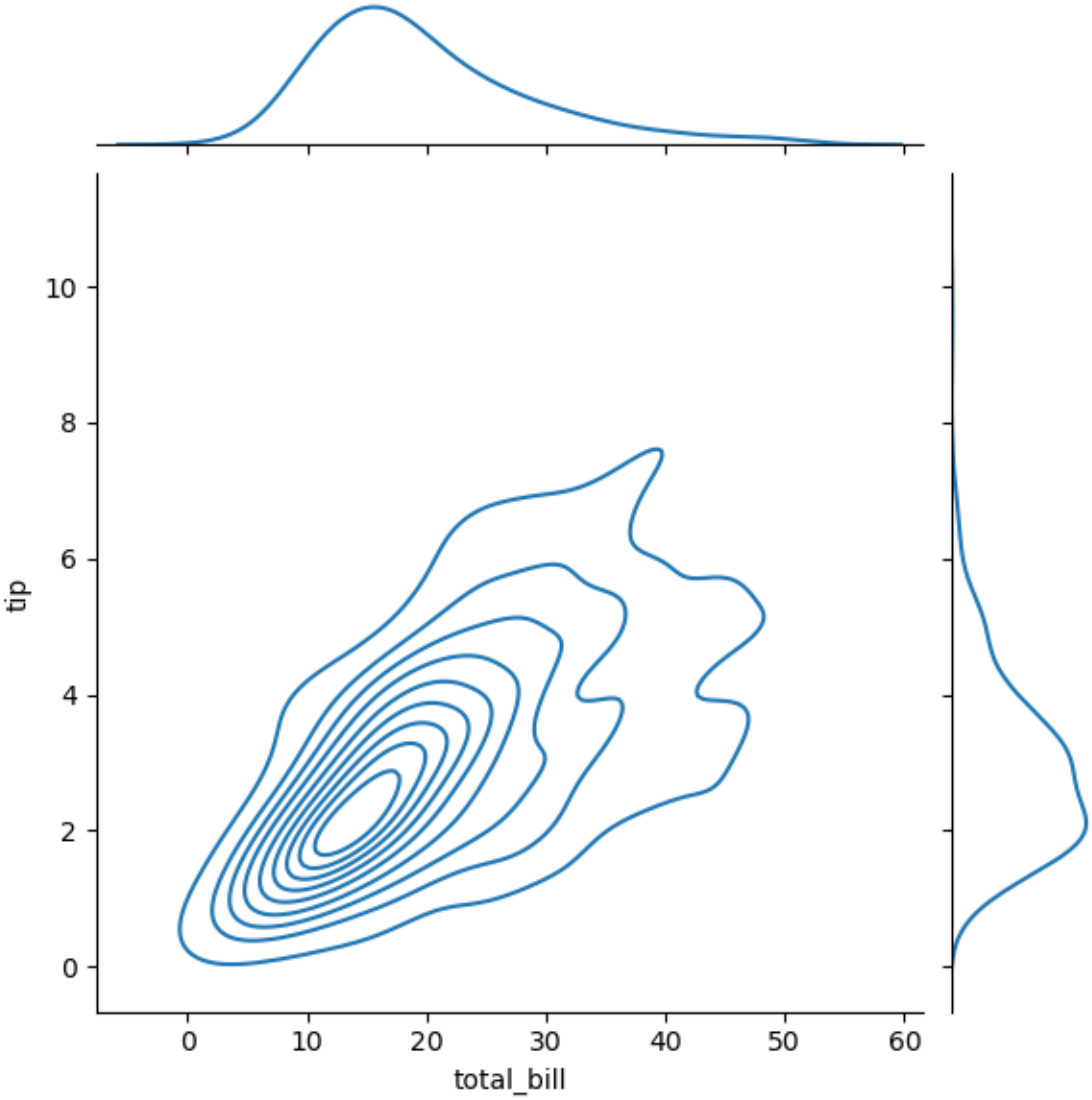
[8]:
```
sns.jointplot(x = 'total_bill', y = 'tip', data = tips, kind = 'hex')
plt.show()
```



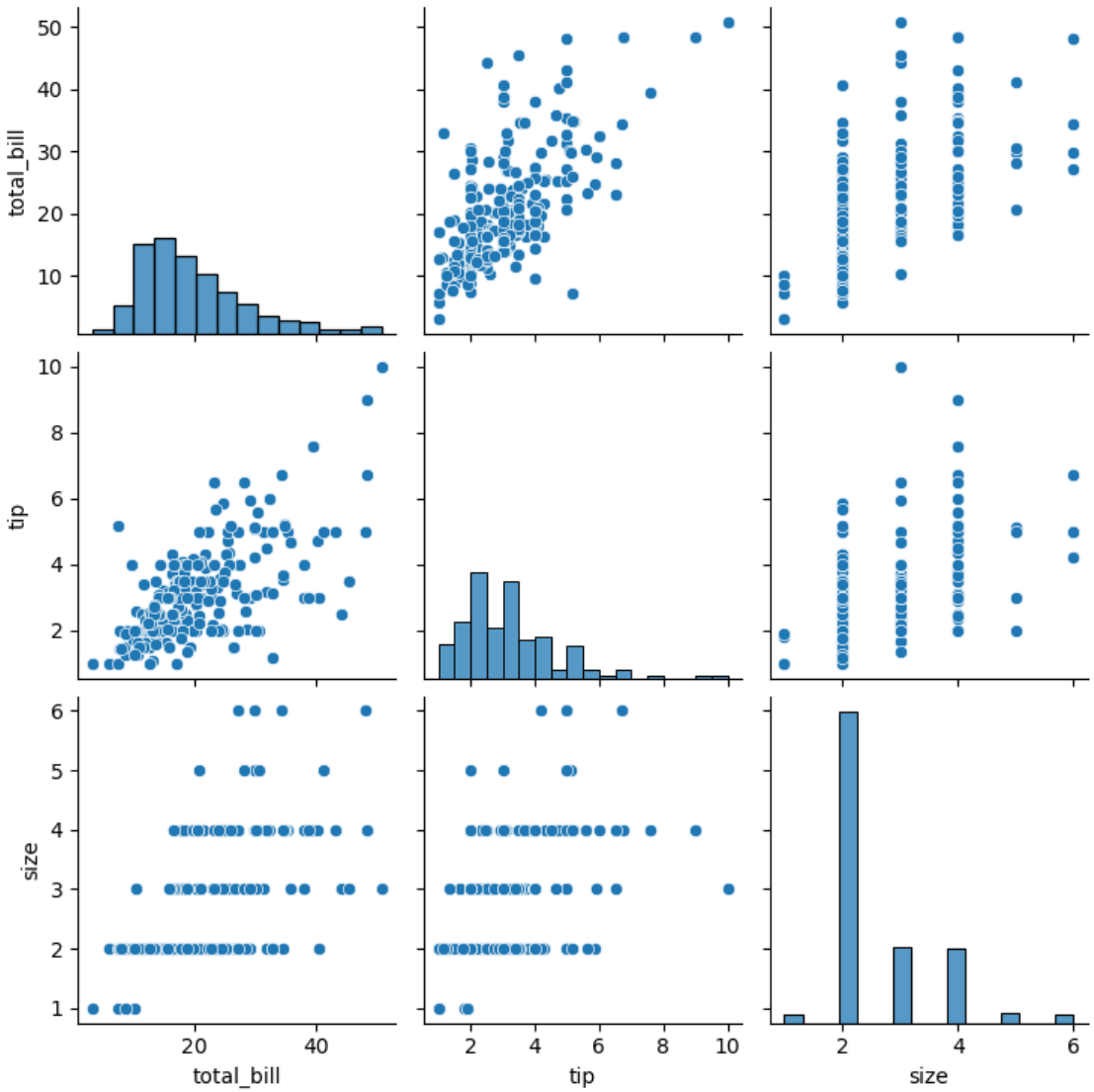
[9]:
```
sns.jointplot(x = 'total_bill', y = 'tip', data = tips, kind = 'reg')
plt.show()
```



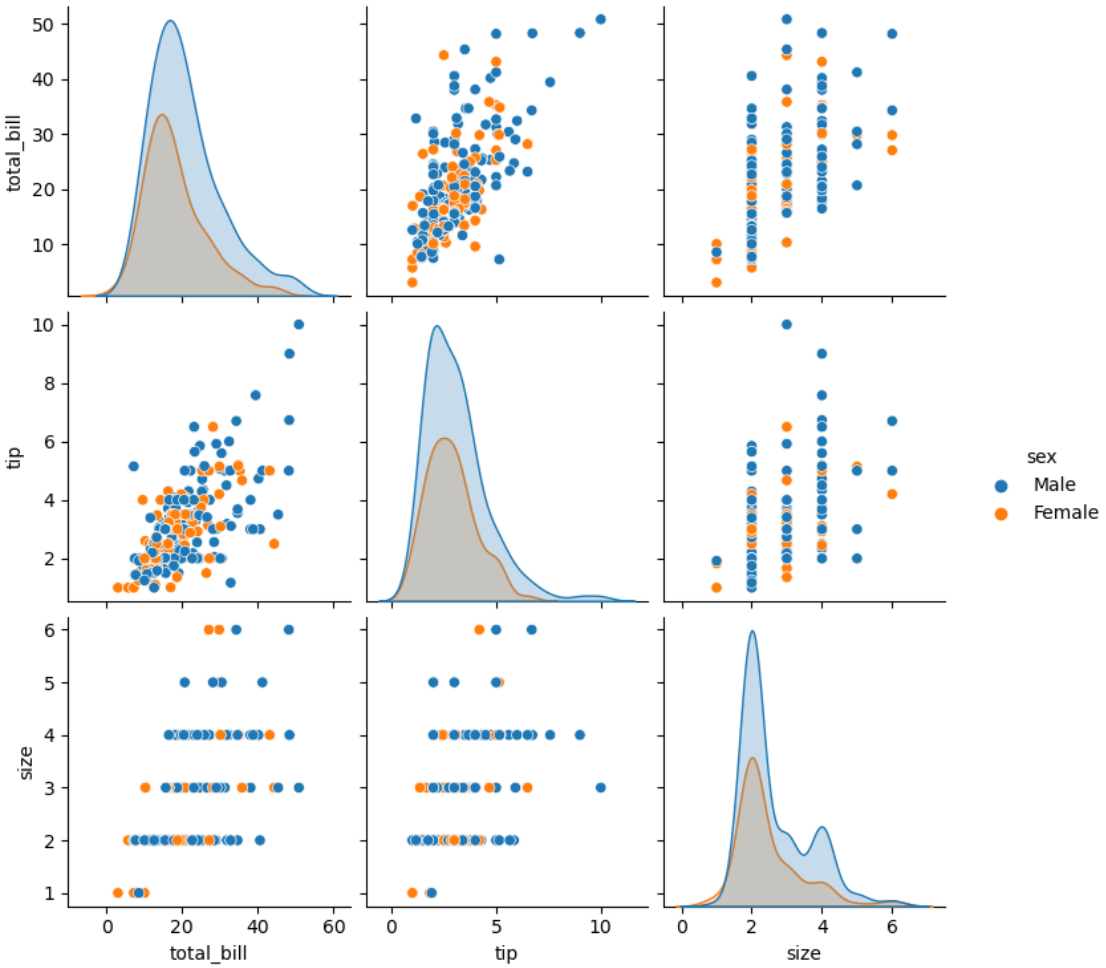
[10]:
```
sns.jointplot(x = 'total_bill', y = 'tip', data = tips, kind = 'kde')
plt.show()
```



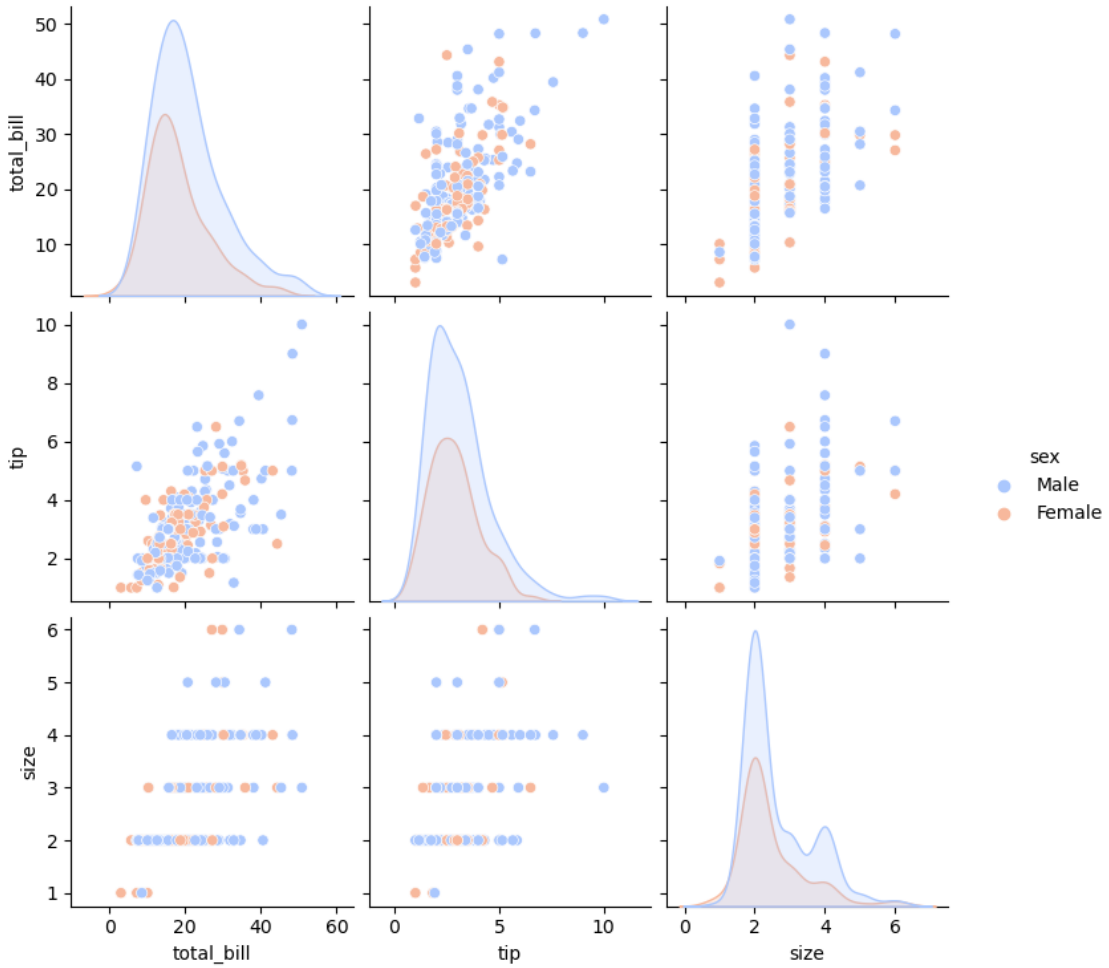
[11]:
```
sns.pairplot(tips)
plt.show()
```



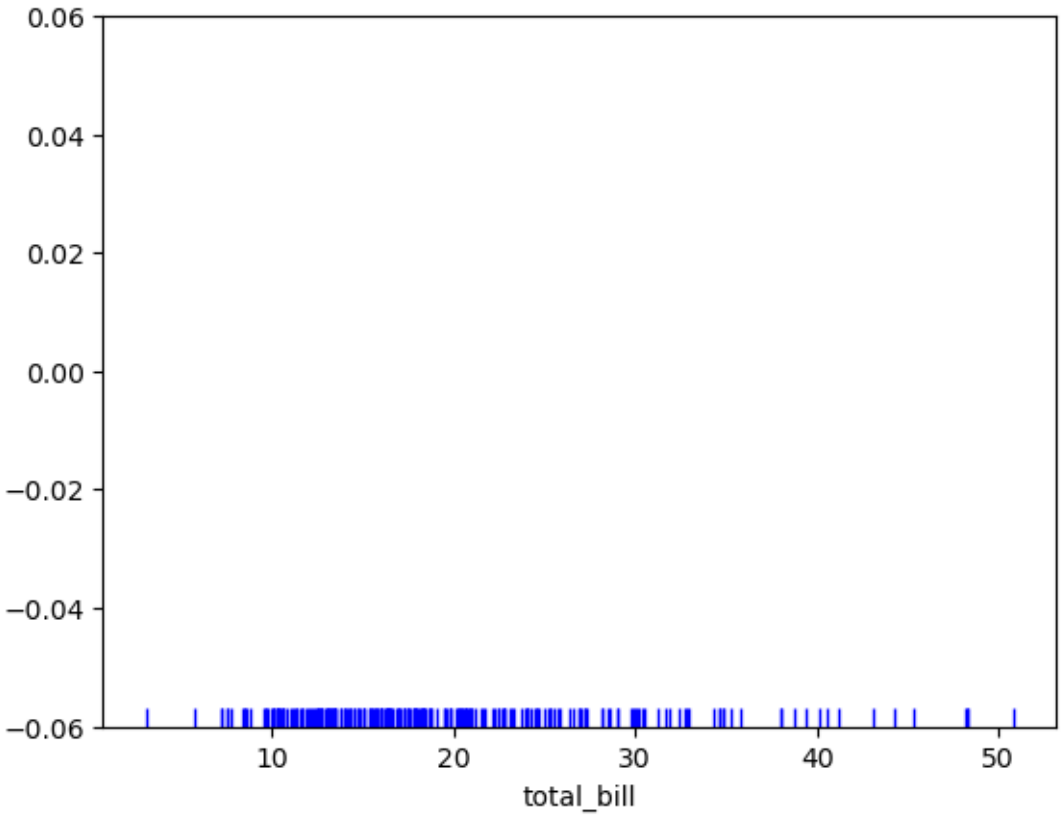
[12]:
```
sns.pairplot(tips, hue = 'sex')
plt.show()
```



[17]:
```
sns.pairplot(tips, hue = 'sex', palette = 'coolwarm')
plt.show()
```



[16]:
```
sns.rugplot(tips.total_bill, color = 'blue')
plt.show()
```



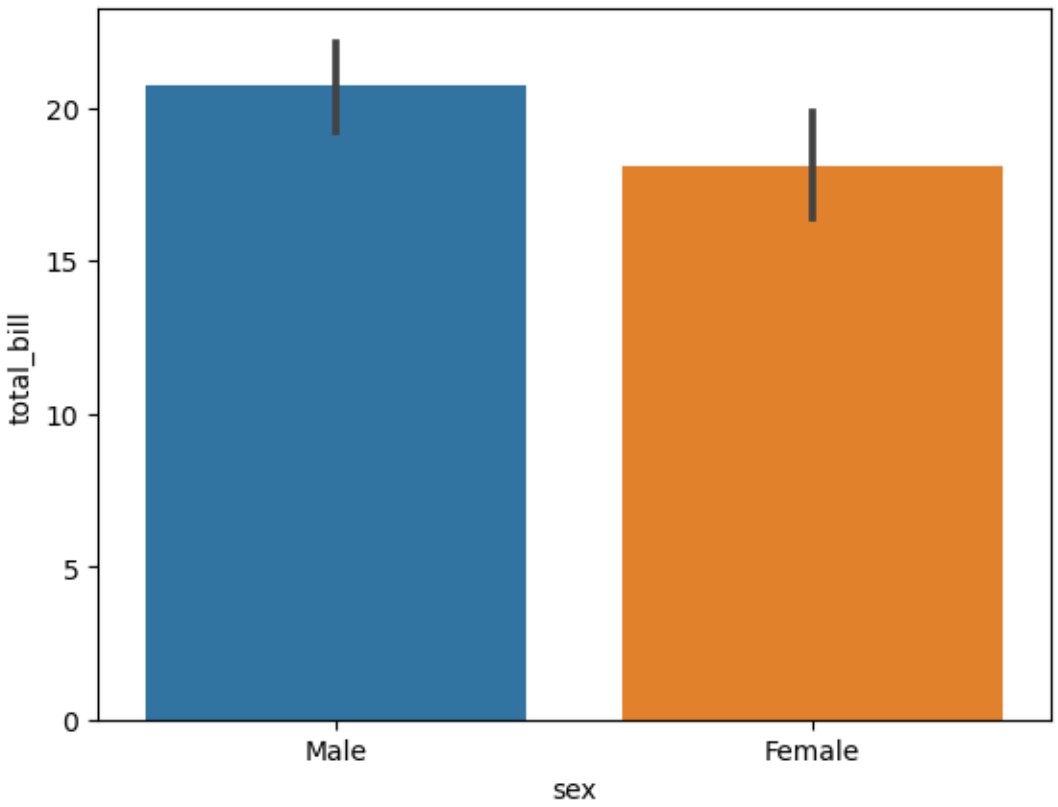
2 Categorical plots

[23]:
```
import seaborn as sns
import matplotlib.pyplot as plt
import numpy as np
tips = sns.load_dataset('tips')
tips.head()
```

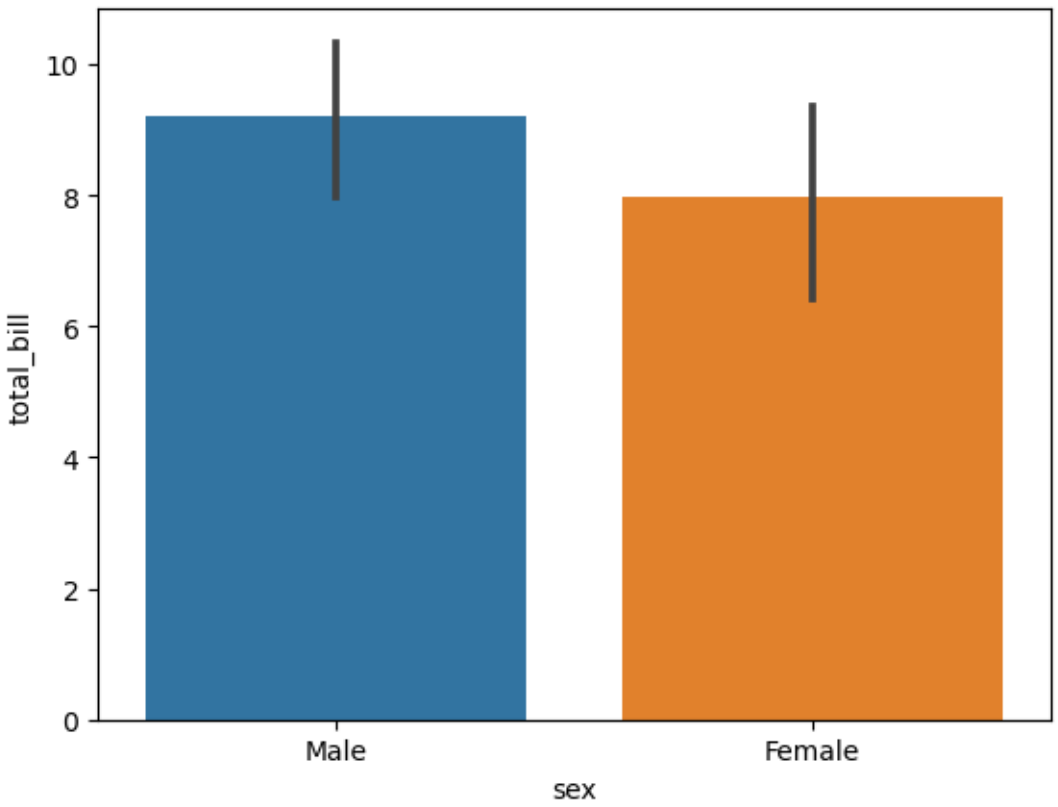
[23]:

	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

[33]:
```
sns.barplot(x = 'sex', y = 'total_bill', data = tips)
plt.show()
```

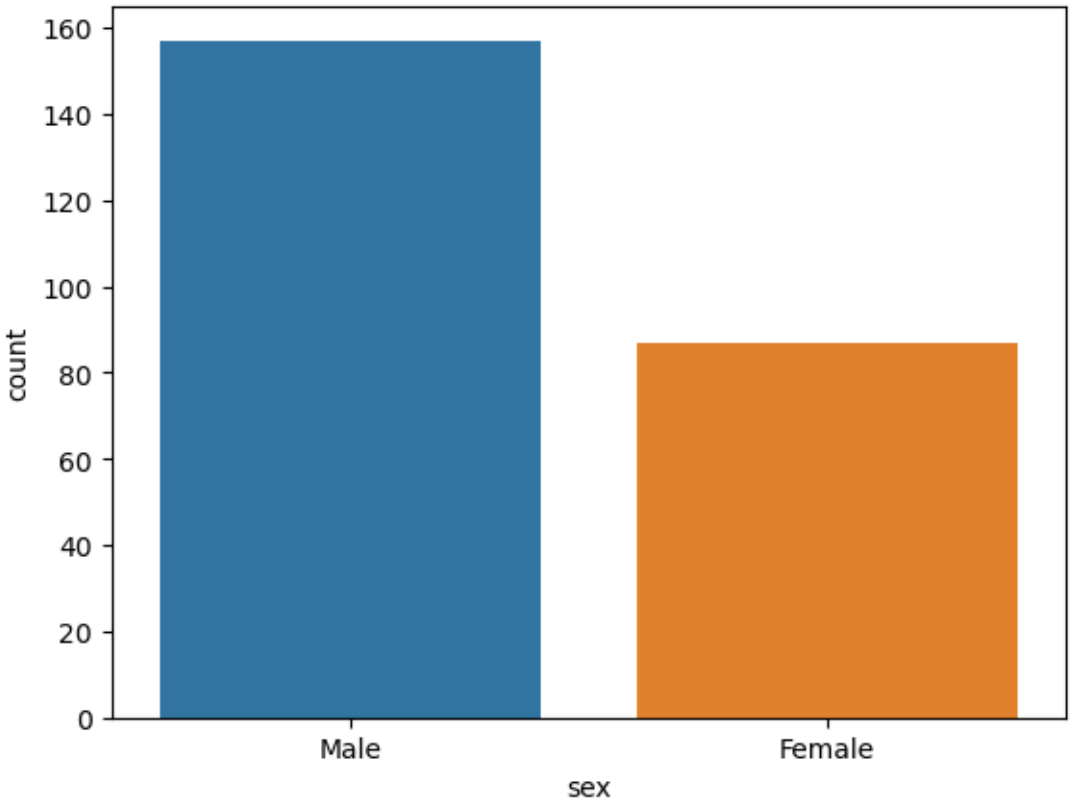


[36]:
```
sns.barplot(x = 'sex', y = 'total_bill', data = tips, estimator = np.std)
plt.show()
```

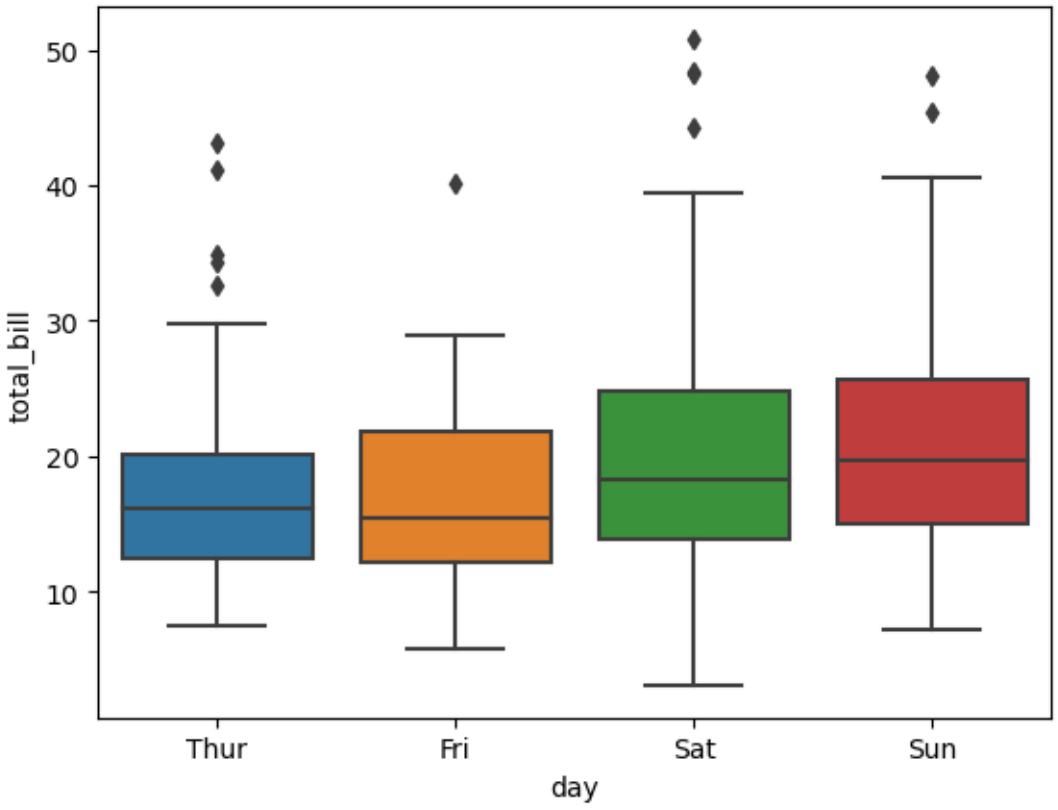


[38]:
```
sns.countplot(x = 'sex', data = tips)
```

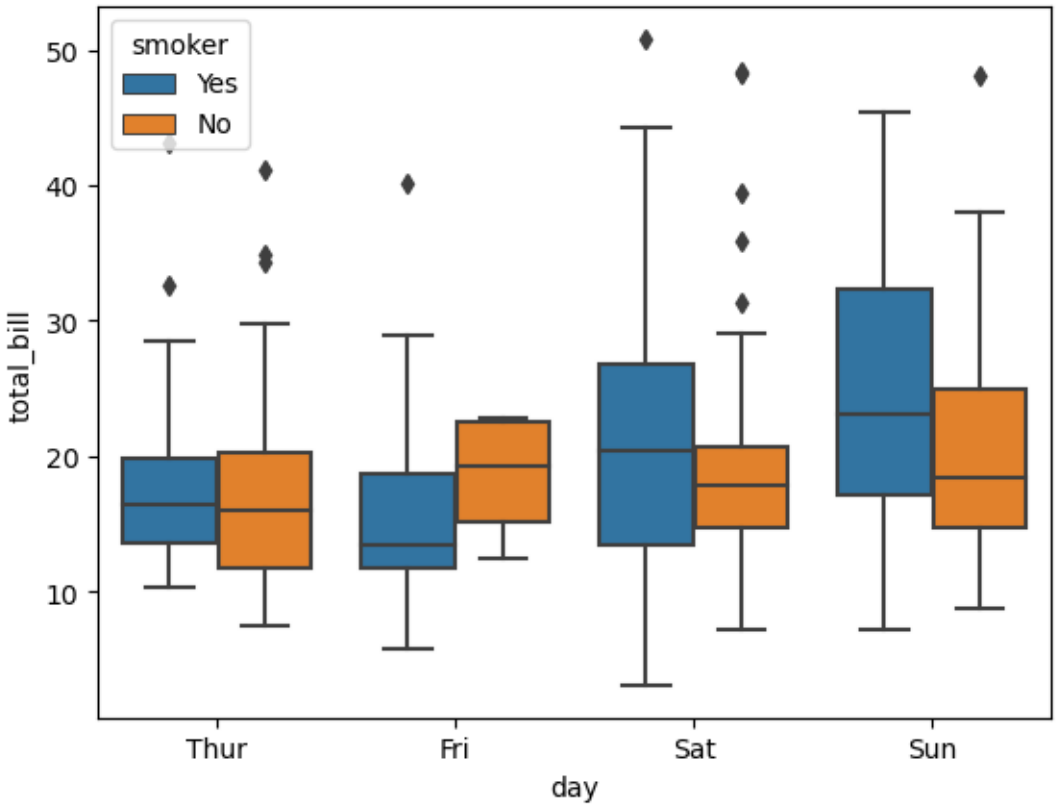
[38]: <Axes: xlabel='sex', ylabel='count'>



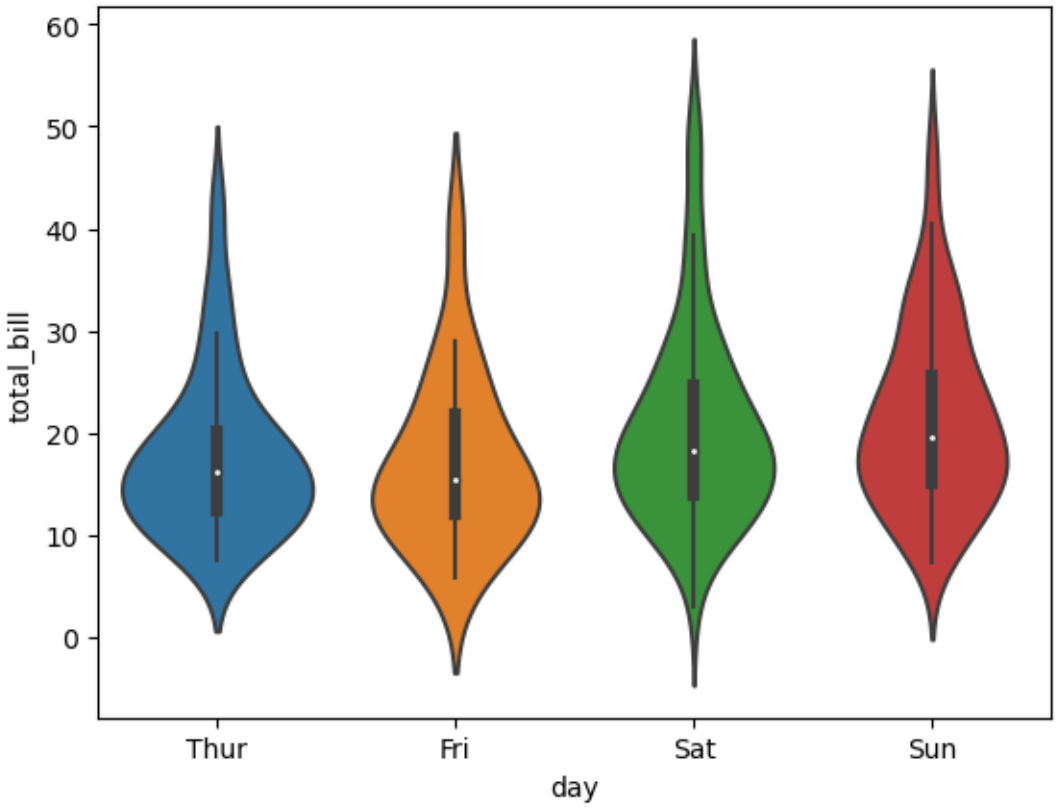
[41]:
```
sns.boxplot(x = 'day', y = 'total_bill', data = tips)
plt.show()
```



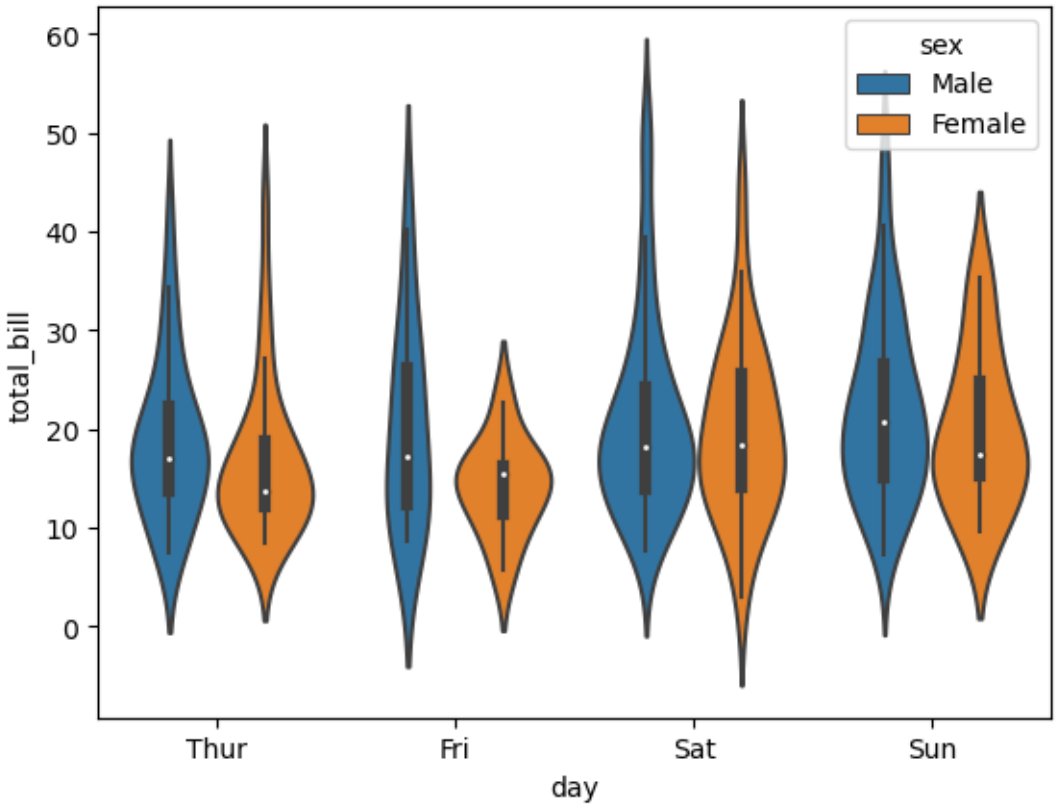
[44]:
```
sns.boxplot(x = 'day', y = 'total_bill', data = tips, hue = 'smoker')
plt.show()
```



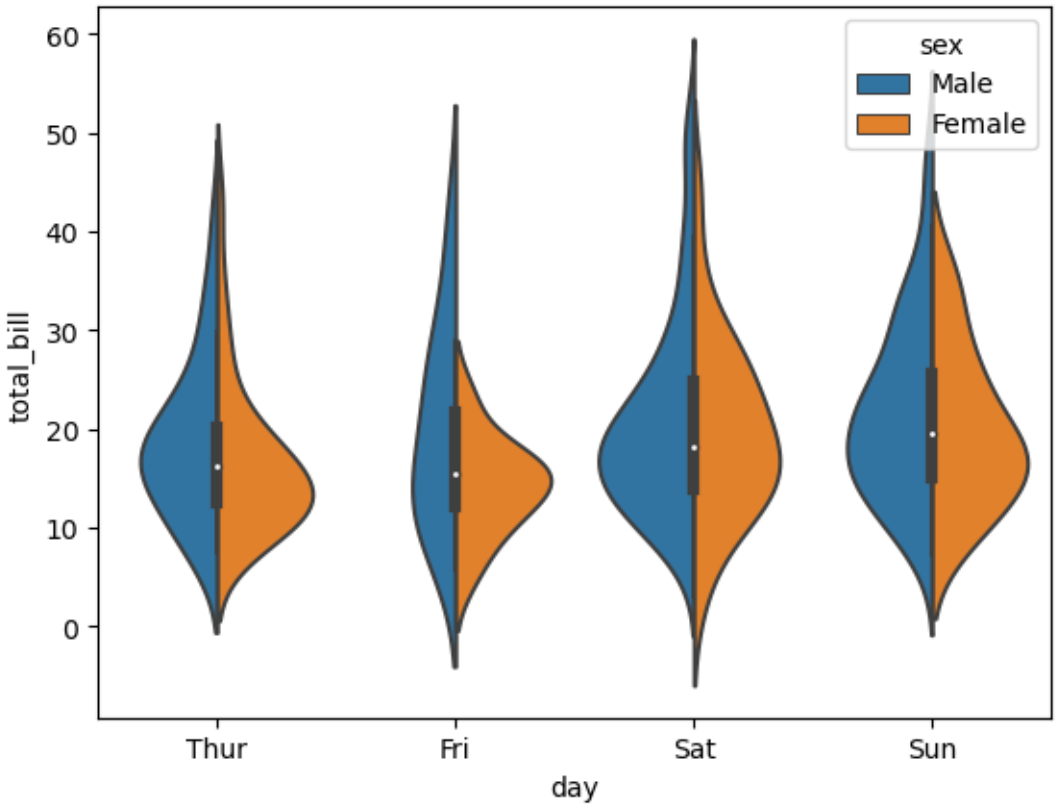
[47]:
```
sns.violinplot(x = 'day', y = 'total_bill', data = tips)
plt.show()
```



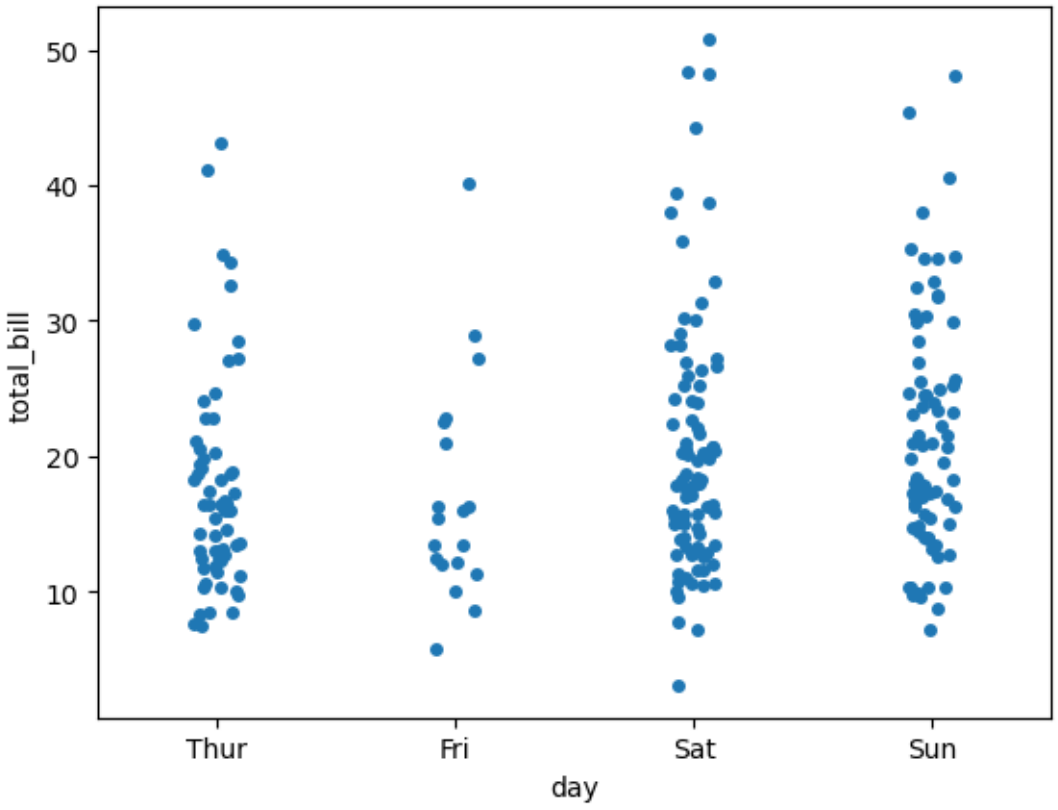
[48]:
```
sns.violinplot(x = 'day', y = 'total_bill', data = tips, hue = 'sex')
plt.show()
```



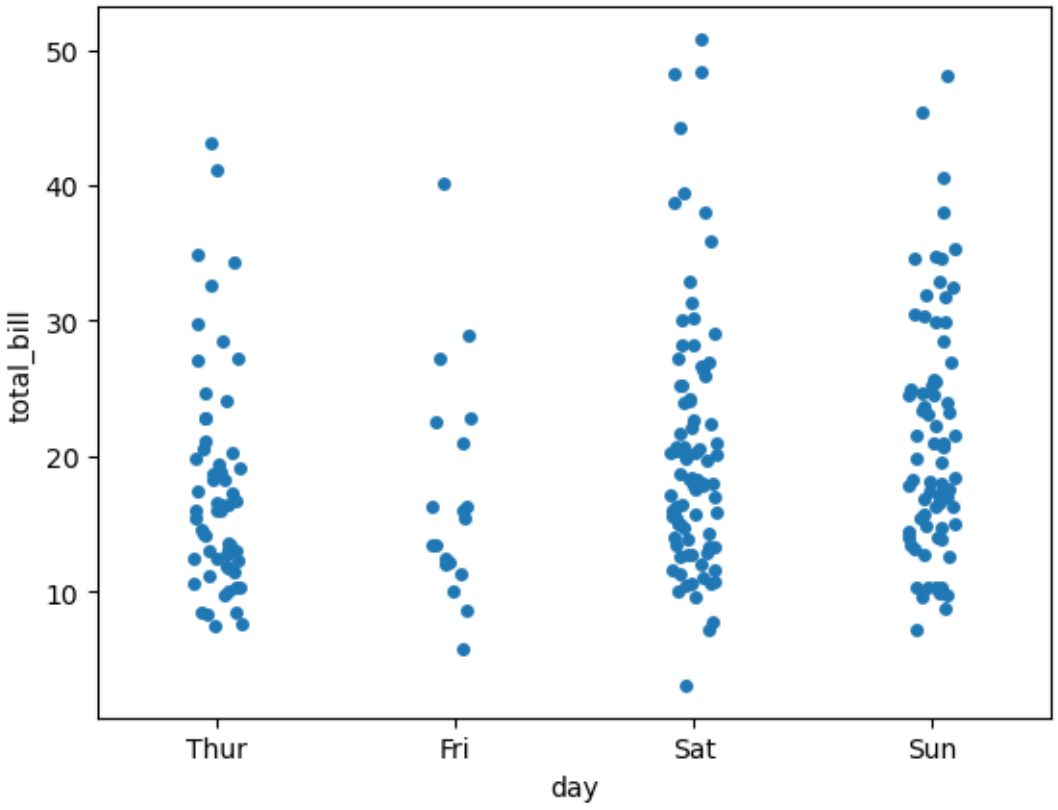
[50]:
```
sns.violinplot(x='day', y='total_bill', data =tips, hue='sex', split=True)
plt.show()
```



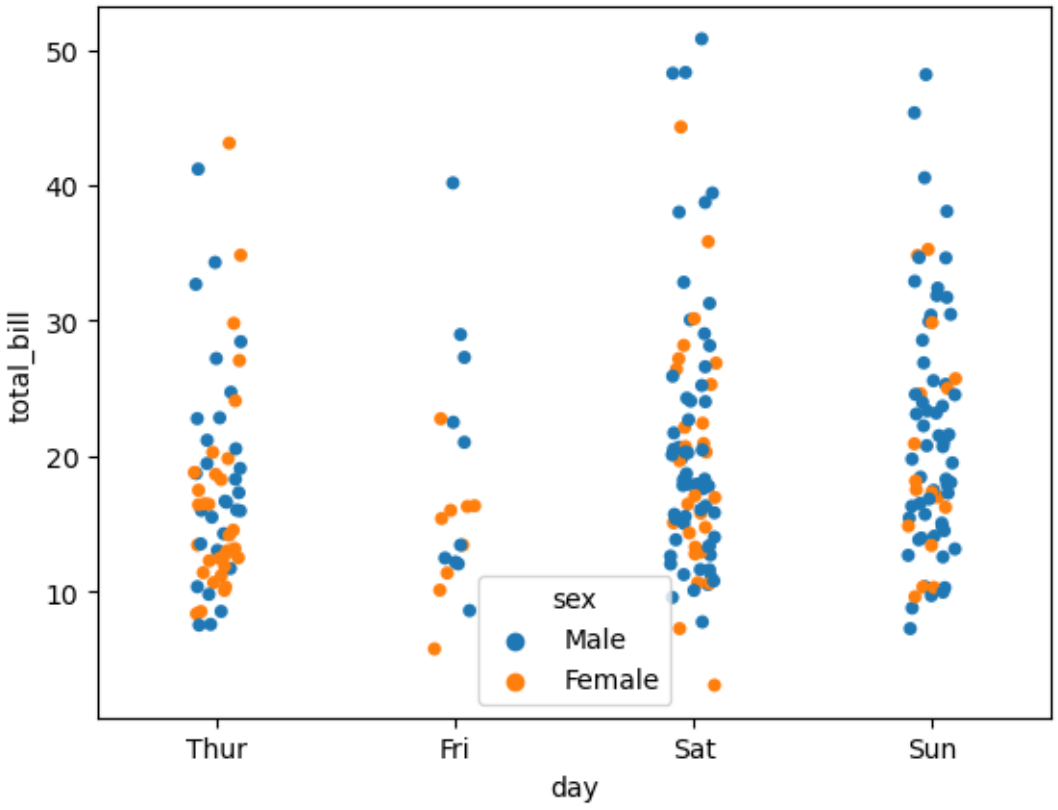
[55]:
```
sns.stripplot(x='day', y='total_bill', data=tips)
plt.show()
```



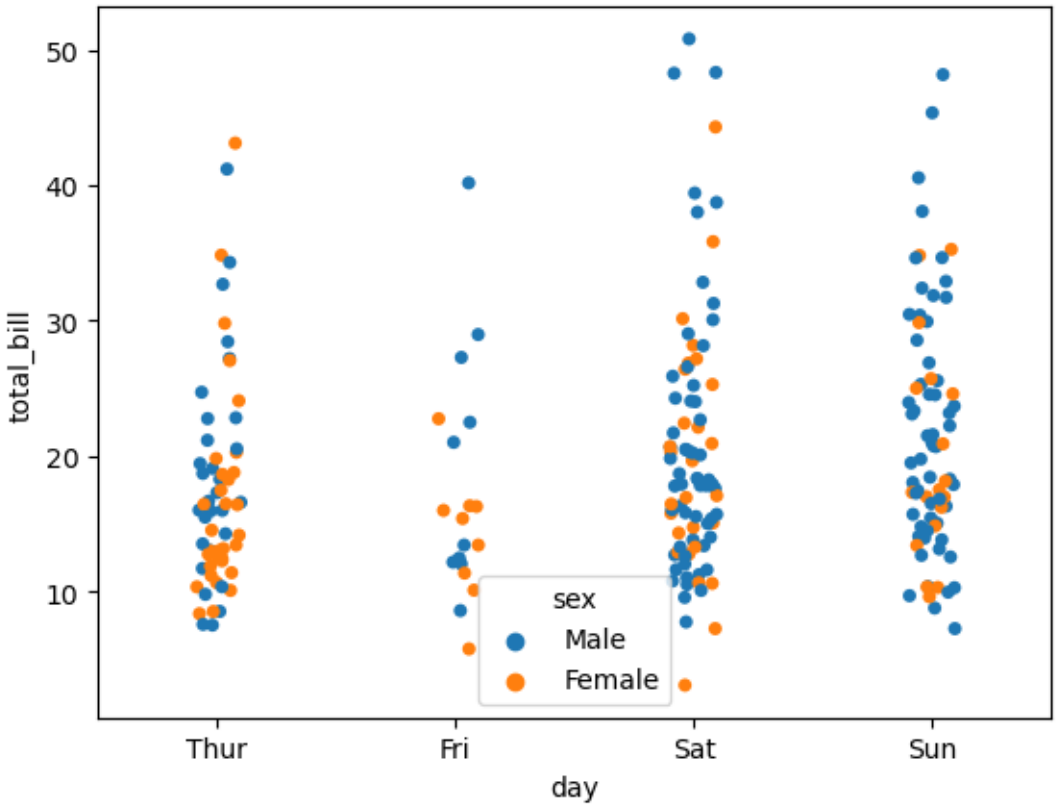
[56]:
```
sns.stripplot(x='day', y='total_bill', data=tips, jitter=True)
plt.show()
```



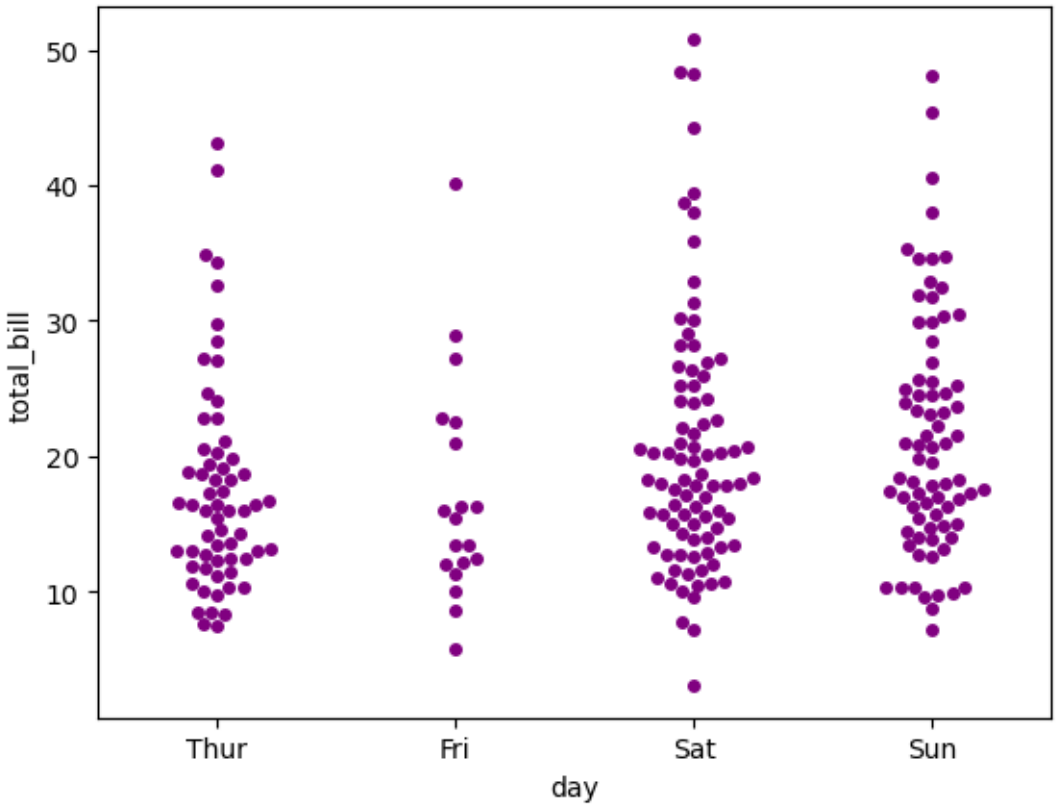
[57]:
```
sns.stripplot(x='day', y='total_bill', data=tips, jitter=True, hue='sex')
plt.show()
```



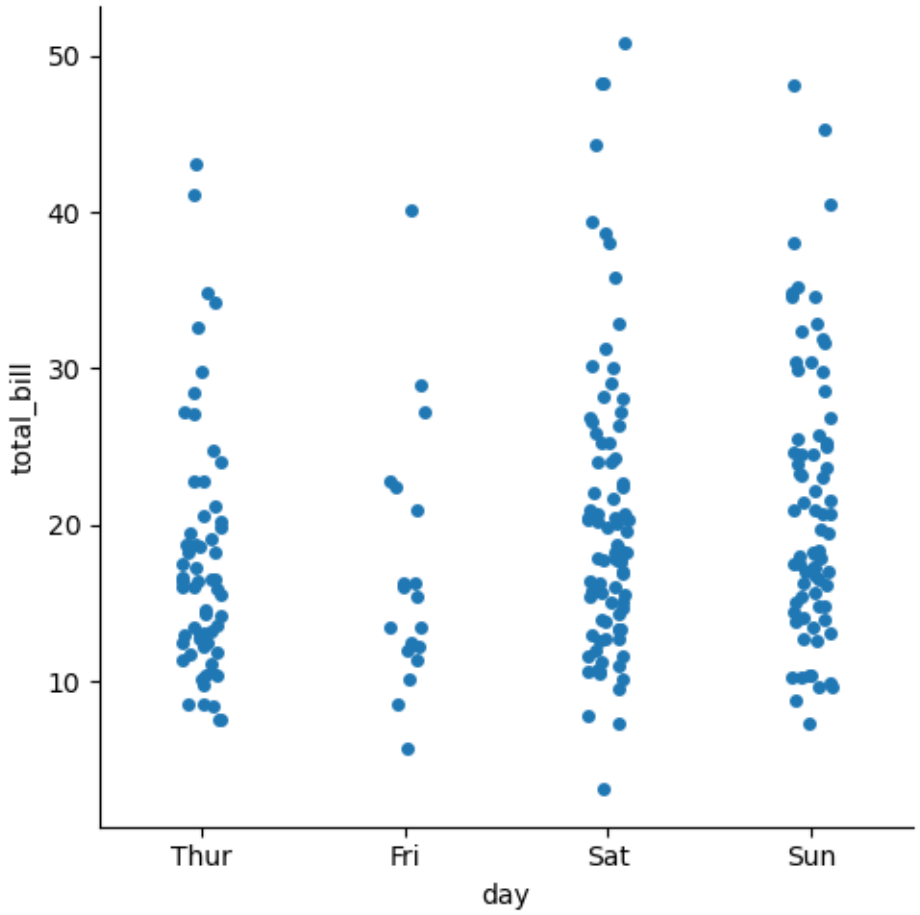
[59]:
```
sns.stripplot(x='day', y='total_bill', data=tips, jitter=True, hue='sex')
plt.show()
```



[65]:
```
sns.swarmplot(x='day', y='total_bill', data=tips, color='purple')
plt.show()
```



[71]:
```
sns.catplot(x='day', y='total_bill', data=tips)
plt.show()
```



3 Matrix plots

[114]:
```
import seaborn as sns
import matplotlib.pyplot as plt
tips = sns.load_dataset('tips')
flights = sns.load_dataset('flights')
tips.head()
```

[114]:

	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

[76]:
```
flights.head()
```

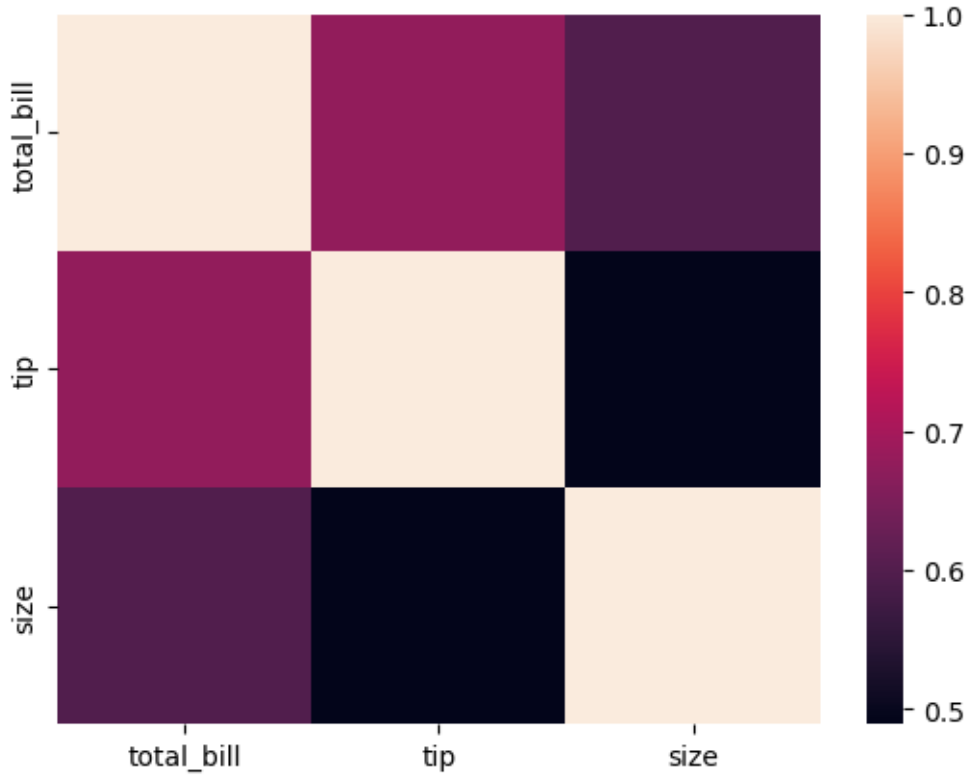
[76]:
```
   year month  passengers
0  1949   Jan         112
1  1949   Feb         118
2  1949   Mar         132
3  1949   Apr         129
4  1949   May         121
```

[89]:
```
tips_corr = tips.corr(numeric_only=[True,False])
```

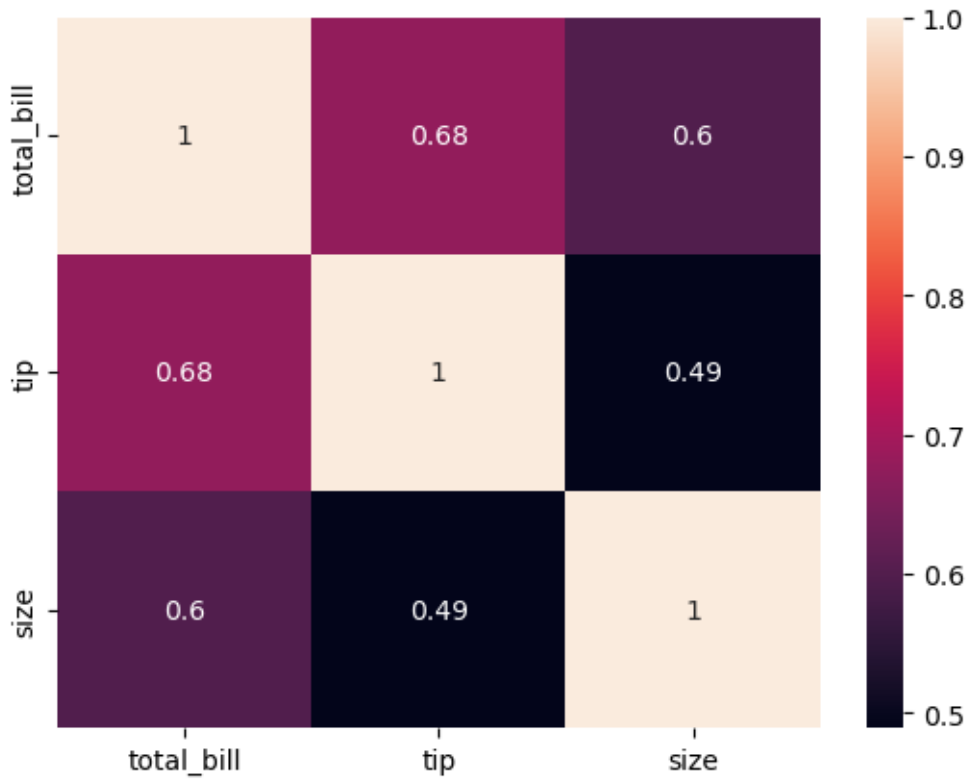
[90]:
```
tips_corr
```

[90]:
```
             total_bill       tip      size
total_bill     1.000000  0.675734  0.598315
tip            0.675734  1.000000  0.489299
size           0.598315  0.489299  1.000000
```

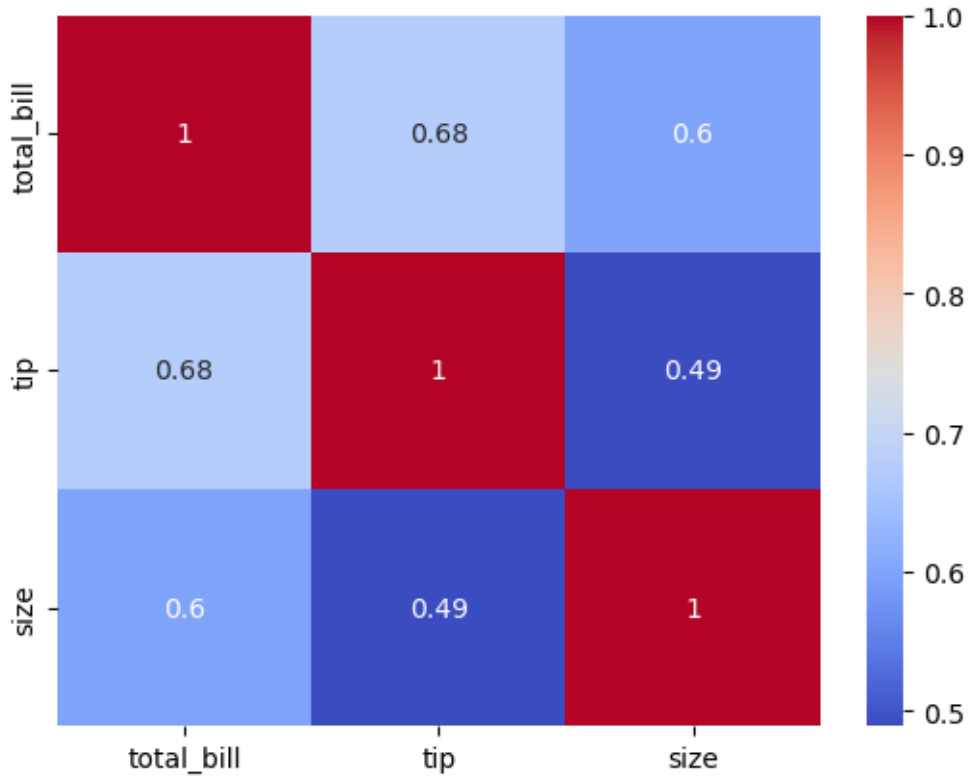
[91]:
```
sns.heatmap(tips_corr)
plt.show()
```



[92]:
```
sns.heatmap(tips_corr, annot=True)
plt.show()
```



[93]:
```
sns.heatmap(tips_corr, annot=True, cmap='coolwarm')
plt.show()
```



[87]:
```
flights
```

[87]:
```
     year month  passengers
0    1949   Jan         112
1    1949   Feb         118
2    1949   Mar         132
3    1949   Apr         129
4    1949   May         121
..    ...   ...         ...
139  1960   Aug         606
140  1960   Sep         508
141  1960   Oct         461
142  1960   Nov         390
143  1960   Dec         432

[144 rows x 3 columns]
```

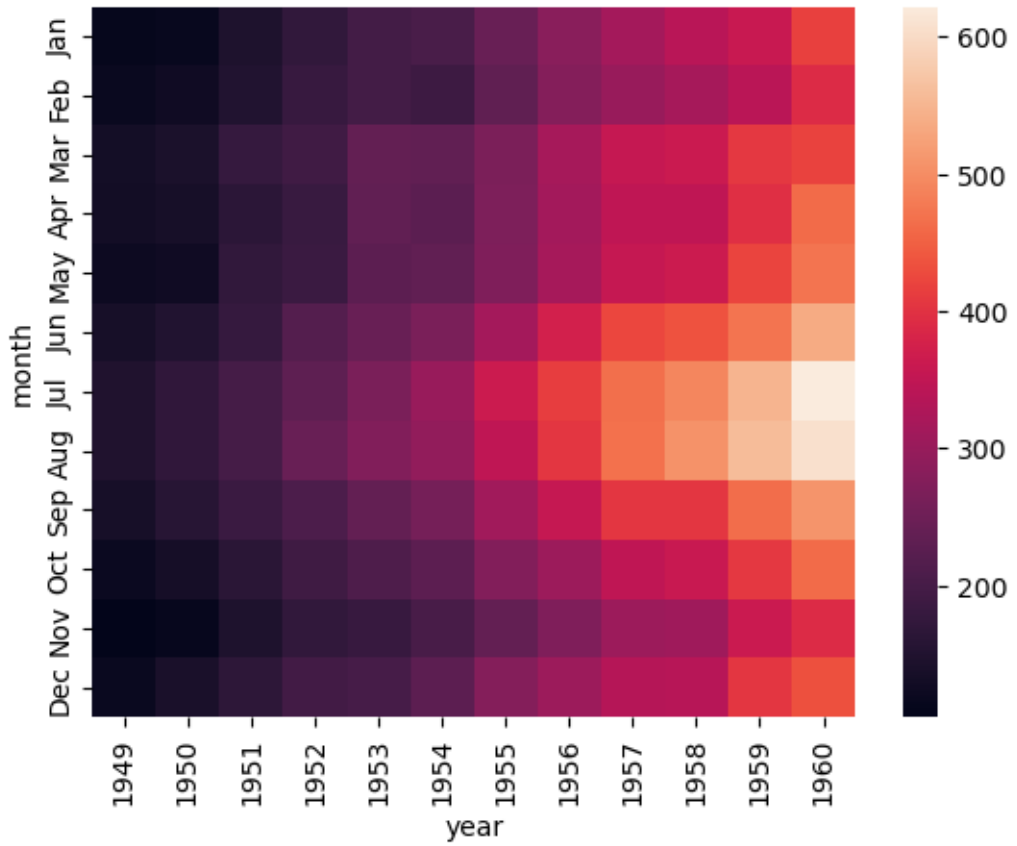
[88]:
```
flights.pivot_table(index='month', columns='year', values='passengers')
```

[88]:
```
year    1949  1950  1951  1952  1953  1954  1955  1956  1957  1958  1959  1960
month
Jan      112   115   145   171   196   204   242   284   315   340   360   417
```

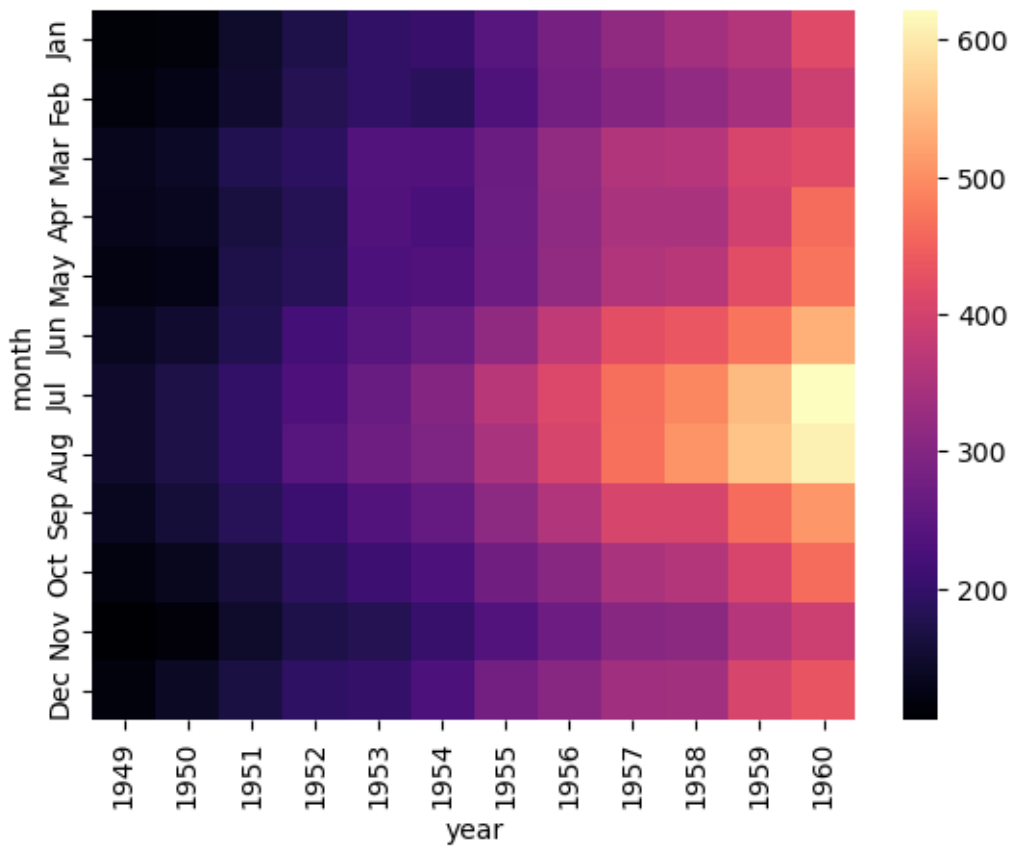
Feb	118	126	150	180	196	188	233	277	301	318	342	391
Mar	132	141	178	193	236	235	267	317	356	362	406	419
Apr	129	135	163	181	235	227	269	313	348	348	396	461
May	121	125	172	183	229	234	270	318	355	363	420	472
Jun	135	149	178	218	243	264	315	374	422	435	472	535
Jul	148	170	199	230	264	302	364	413	465	491	548	622
Aug	148	170	199	242	272	293	347	405	467	505	559	606
Sep	136	158	184	209	237	259	312	355	404	404	463	508
Oct	119	133	162	191	211	229	274	306	347	359	407	461
Nov	104	114	146	172	180	203	237	271	305	310	362	390
Dec	118	140	166	194	201	229	278	306	336	337	405	432

[94]:
```
flight_pivot = flights.pivot_table(index='month', columns='year',␣
↪values='passengers')
```

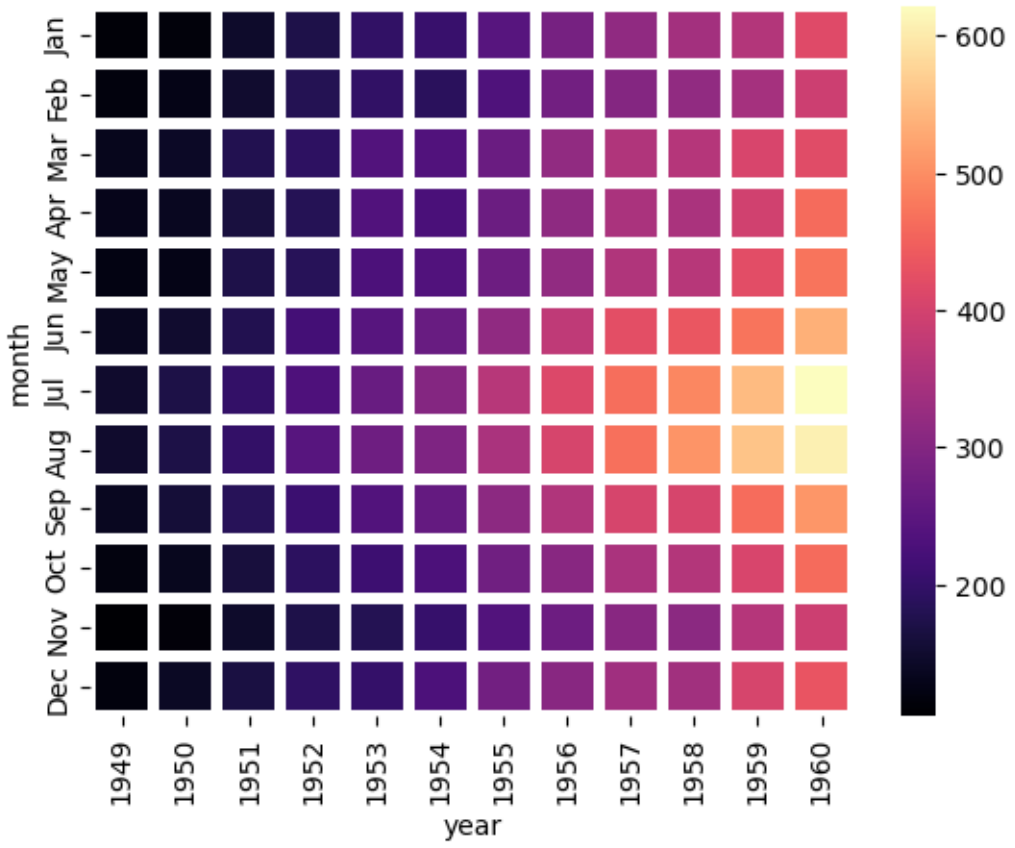
[100]:
```
sns.heatmap(flight_pivot)
plt.show()
```



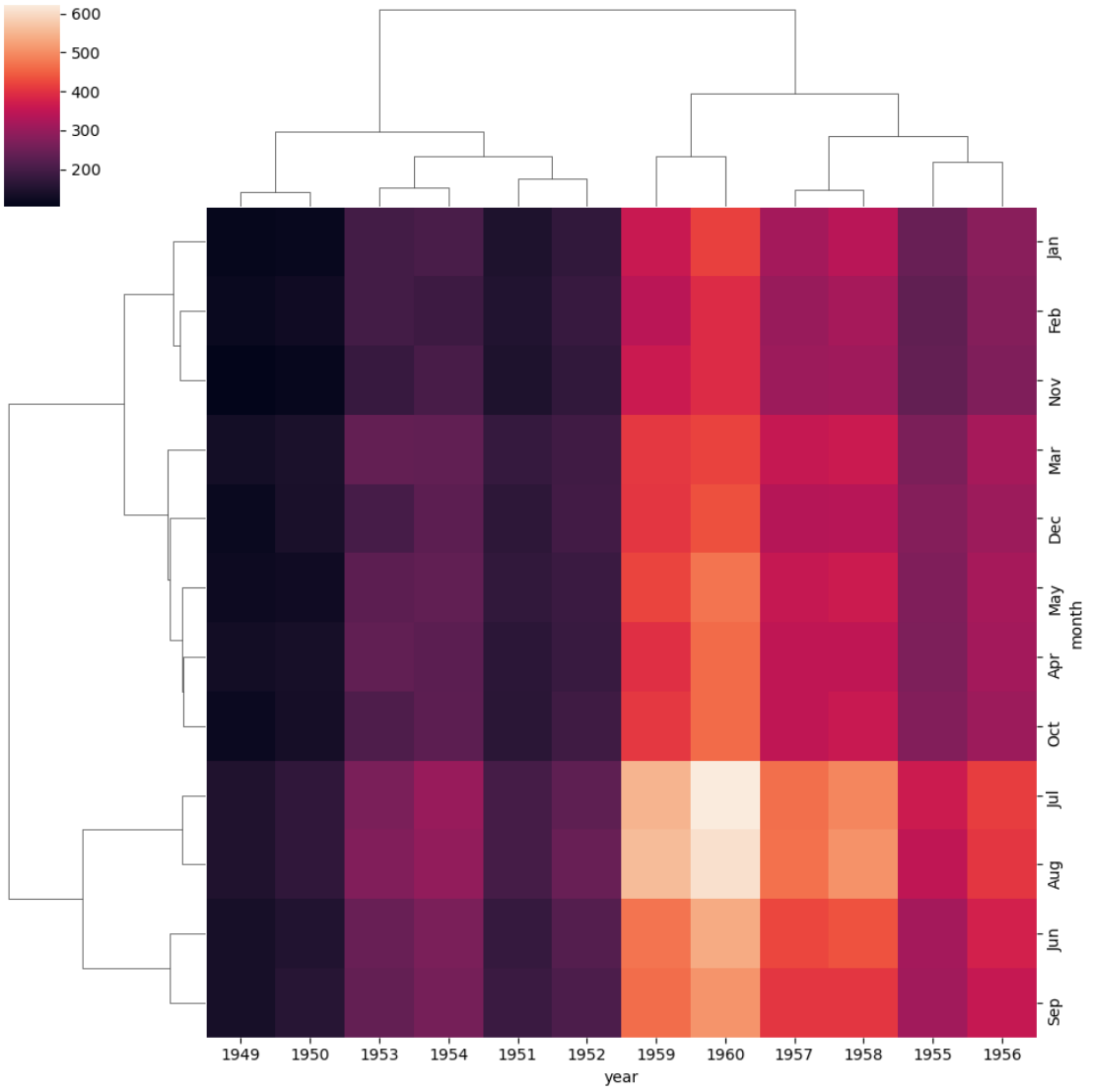
[101]:
```
sns.heatmap(flight_pivot, cmap='magma')
plt.show()
```



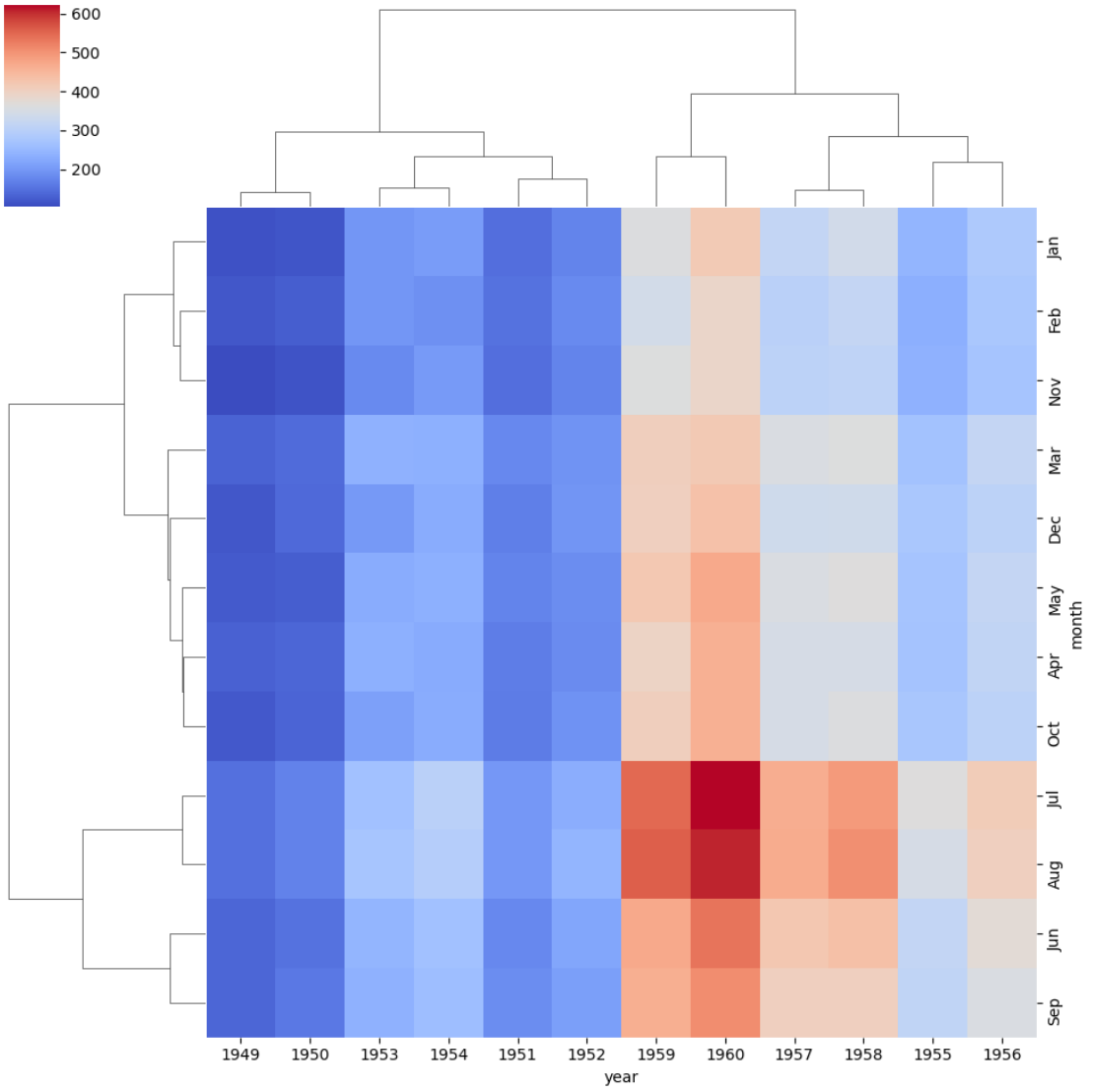
[104]:
```
sns.heatmap(flight_pivot, cmap='magma', linecolor='white', linewidths=3)
plt.show()
```



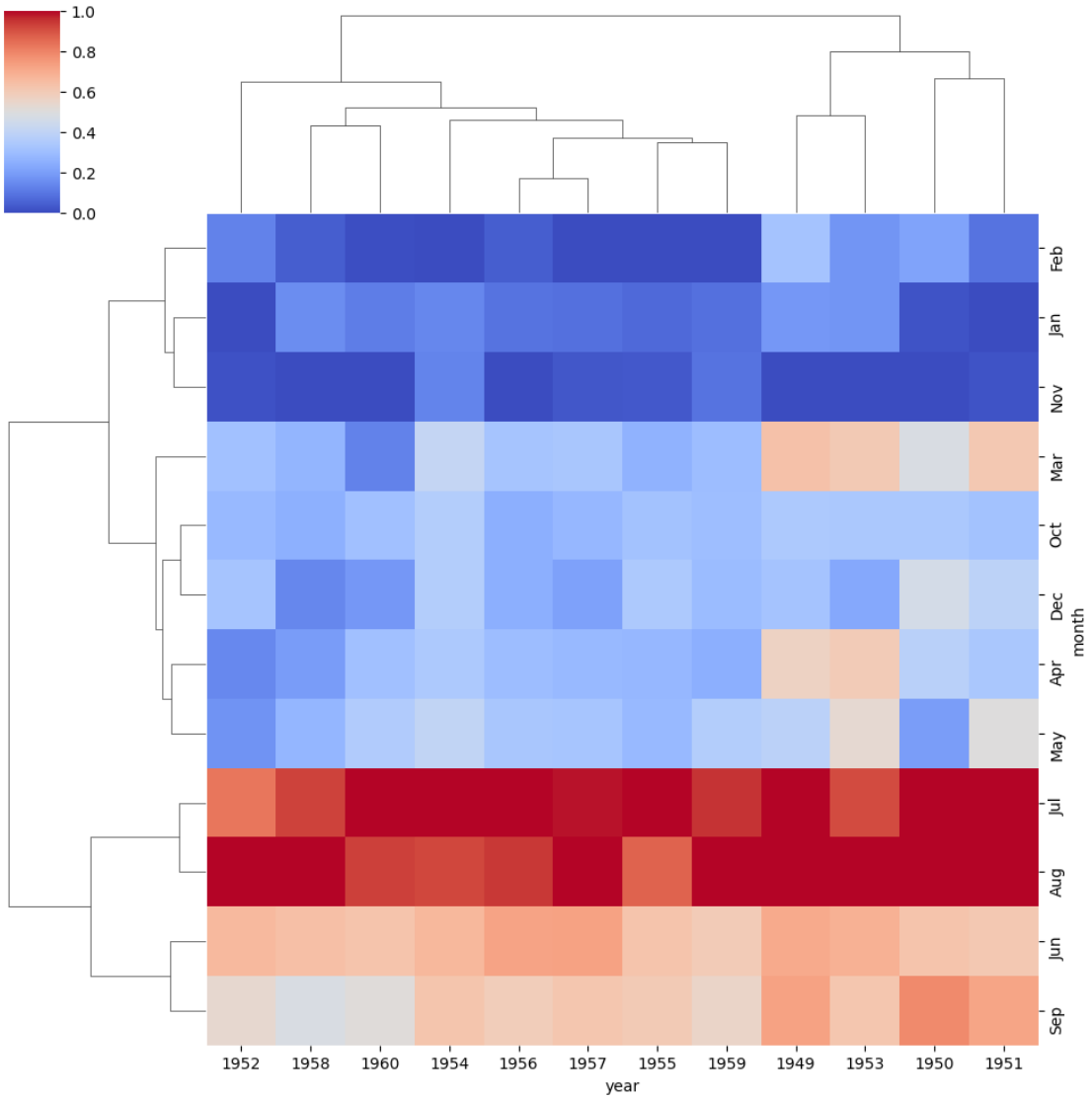
[106]:
```
sns.clustermap(flight_pivot)
plt.show()
```



[112]:
```
sns.clustermap(flight_pivot, cmap='coolwarm')
plt.show()
```



[113]:
```
sns.clustermap(flight_pivot, cmap='coolwarm', standard_scale=1)
plt.show()
```



4 Grids

[115]:
```
import seaborn as sns
import matplotlib.pyplot as plt
iris = sns.load_dataset('iris')
iris.head()
```

[115]:

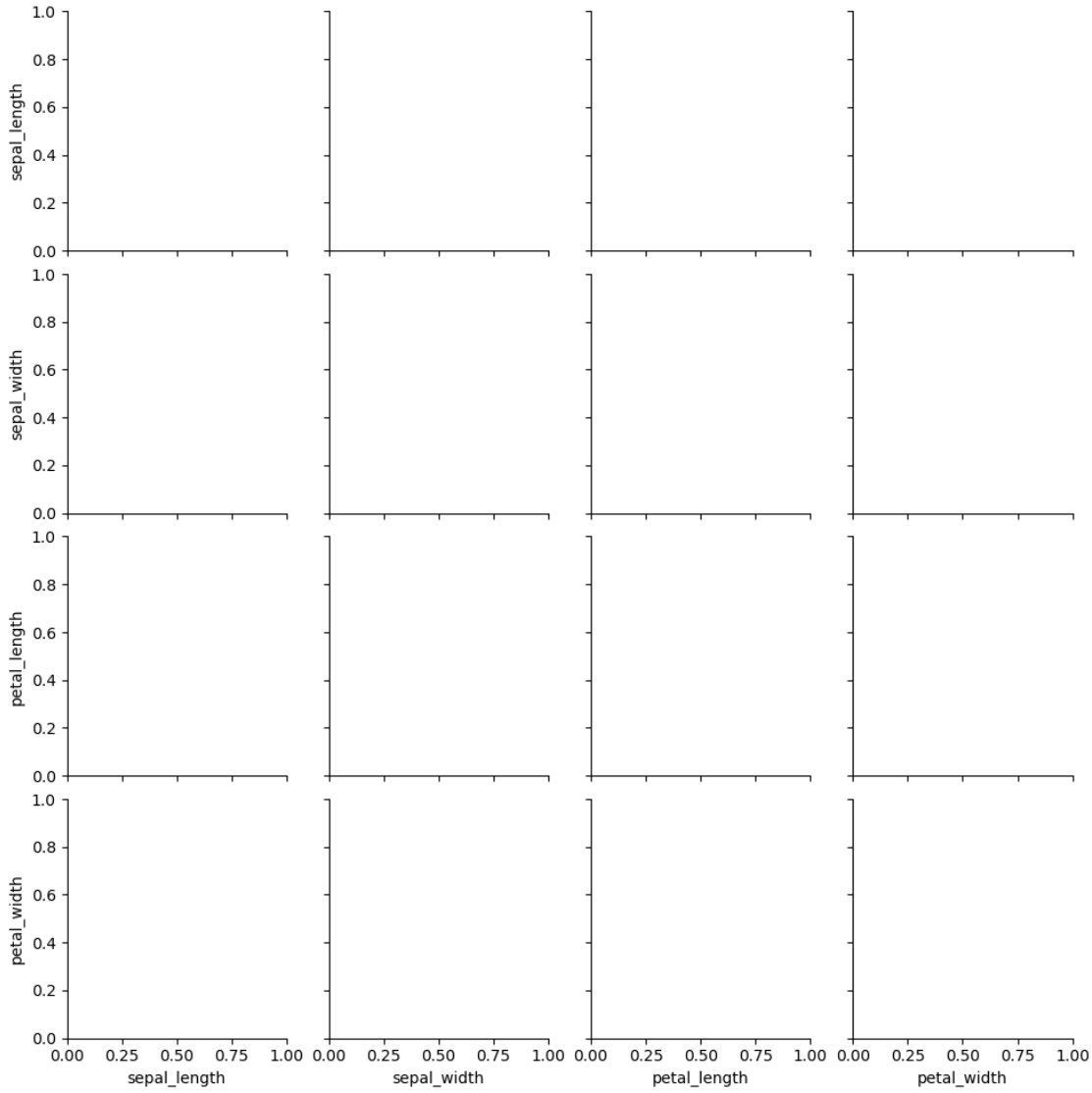
	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa

```
4           5.0          3.6           1.4          0.2  setosa
```

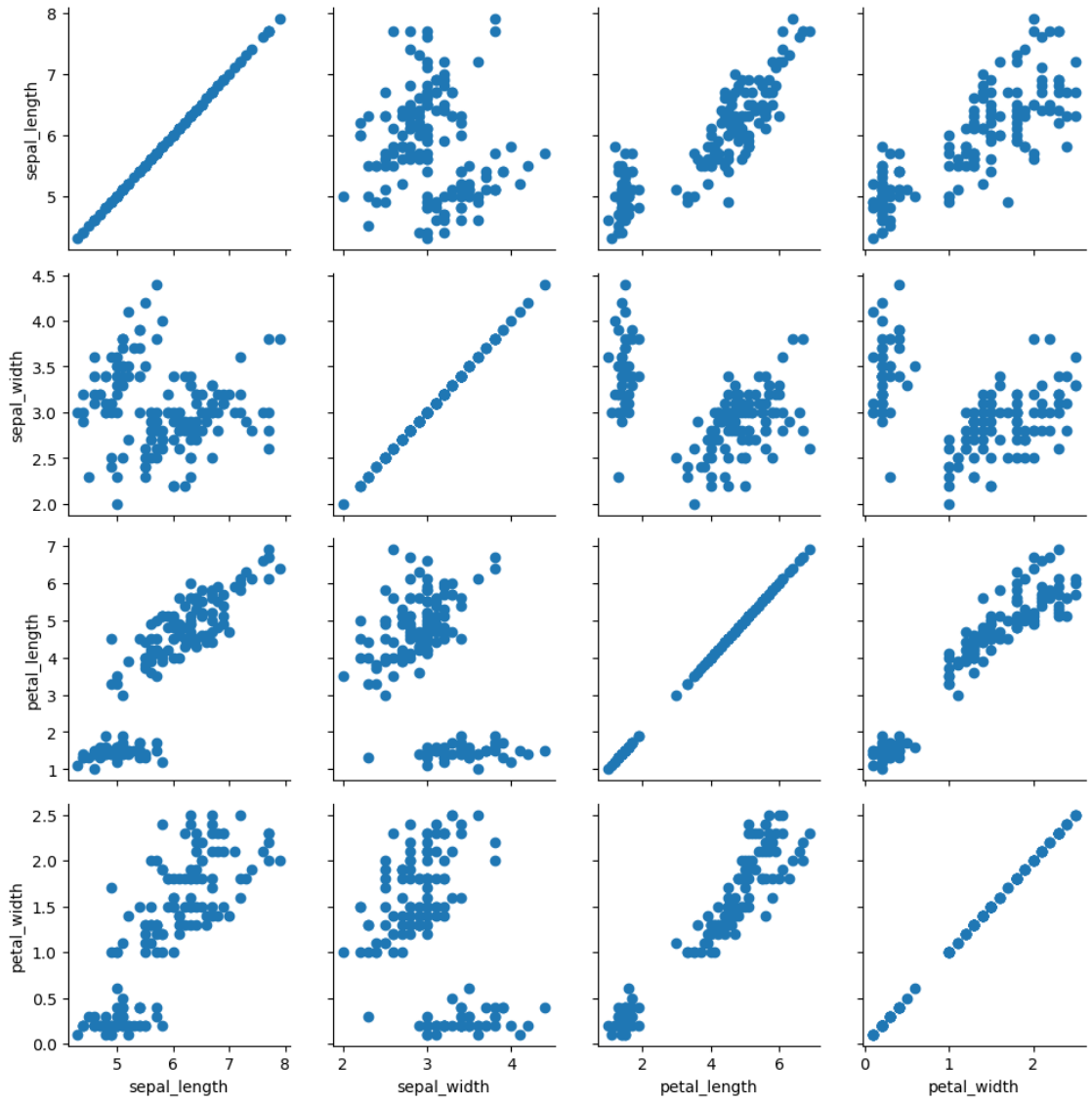
[120]:
```
print(iris.species.unique())
```

```
['setosa' 'versicolor' 'virginica']
```

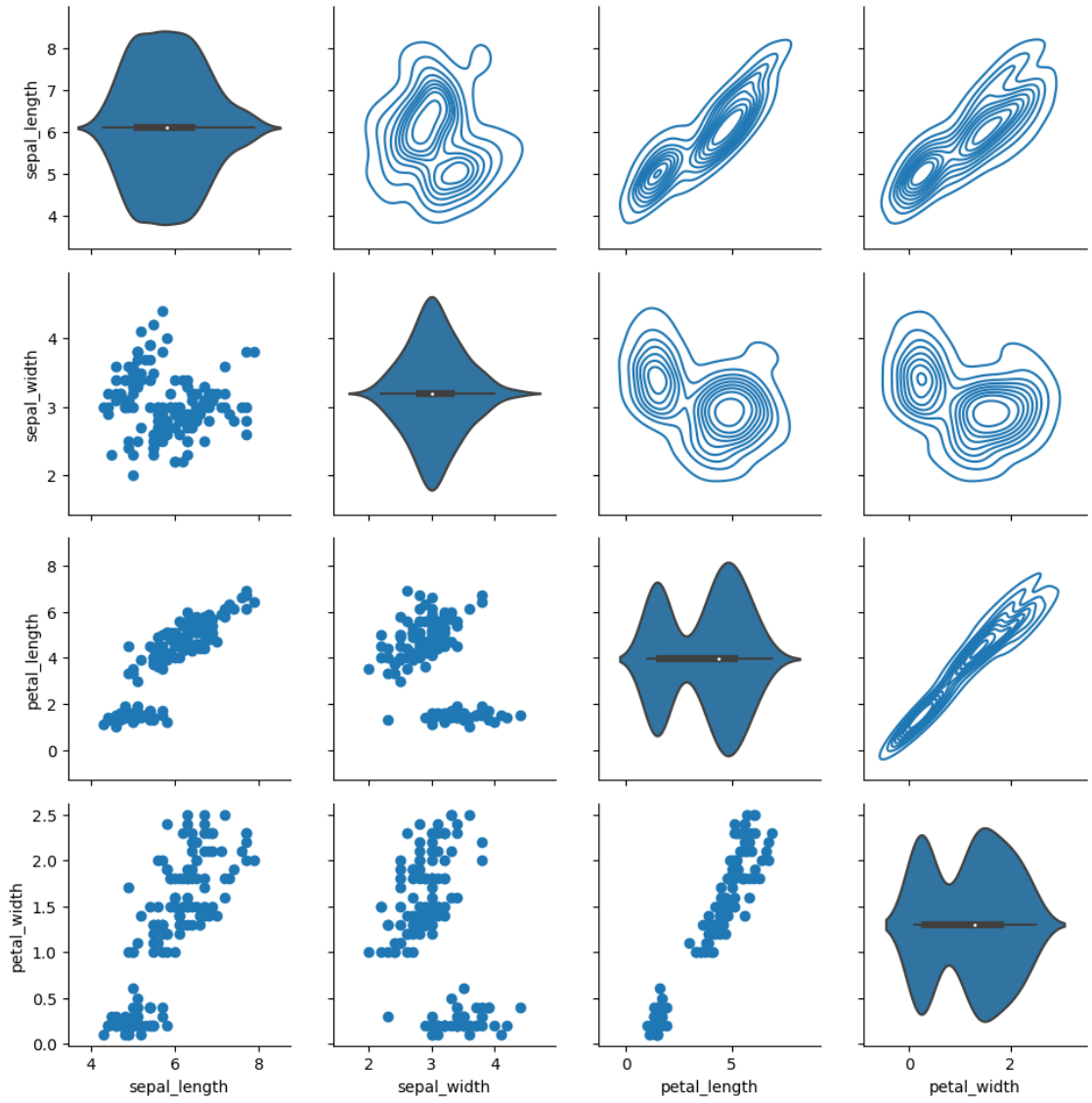
[123]:
```
sns.PairGrid(iris)
plt.show()
```



[127]:
```
mapping = sns.PairGrid(iris)
mapping.map(plt.scatter)
plt.show()
```



[132]:
```
mapping = sns.PairGrid(iris)
mapping.map_diag(sns.violinplot)
mapping.map_upper(sns.kdeplot)
mapping.map_lower(plt.scatter)
plt.show()
```



[136]:
```
tips = sns.load_dataset('tips')
tips
```

[136]:

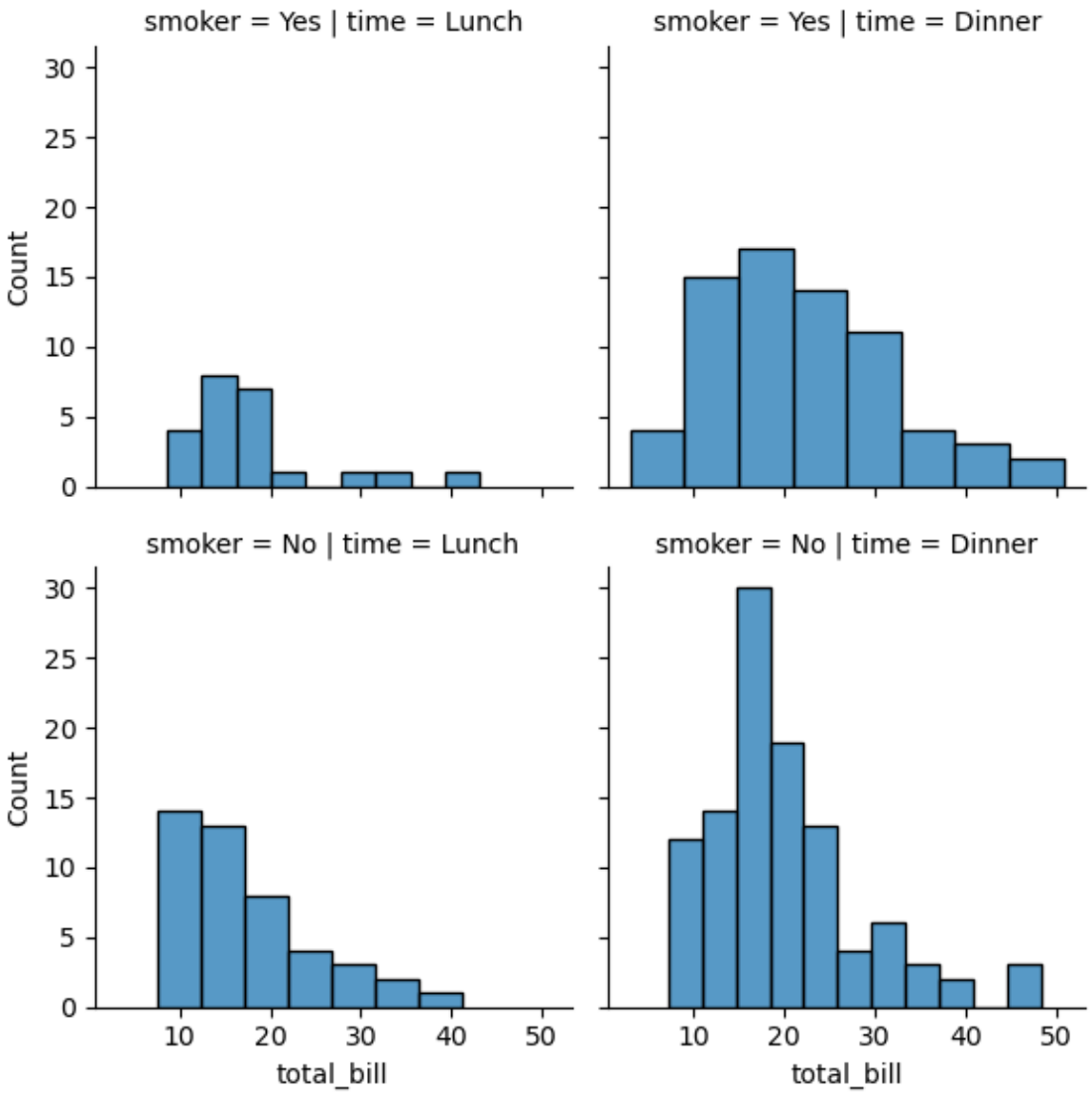
	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
..	…	…	…	…	…	…	…
239	29.03	5.92	Male	No	Sat	Dinner	3
240	27.18	2.00	Female	Yes	Sat	Dinner	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]
```

mapping = sns.FacetGrid(data=tips, col='time', row='smoker')

[145]:
```
mapping = sns.FacetGrid(data=tips, col='time', row='smoker')
mapping.map(sns.histplot,'total_bill')
plt.show()
```



5 Regression plots

[ ]: