In [36]:
```python
%matplotlib inline
```

In [37]:
```python
import seaborn as sns
```

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

In [39]:
```python
print(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]
```

In [40]:
```python
penguins = sns.load_dataset("penguins")
```

In [41]:
```python
print(penguins)
```

```
    species     island  bill_length_mm  bill_depth_mm  flipper_length_mm  \
0    Adelie  Torgersen            39.1           18.7              181.0
1    Adelie  Torgersen            39.5           17.4              186.0
2    Adelie  Torgersen            40.3           18.0              195.0
3    Adelie  Torgersen             NaN            NaN                NaN
4    Adelie  Torgersen            36.7           19.3              193.0
..      ...        ...             ...            ...                ...
339  Gentoo     Biscoe             NaN            NaN                NaN
340  Gentoo     Biscoe            46.8           14.3              215.0
341  Gentoo     Biscoe            50.4           15.7              222.0
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]
```
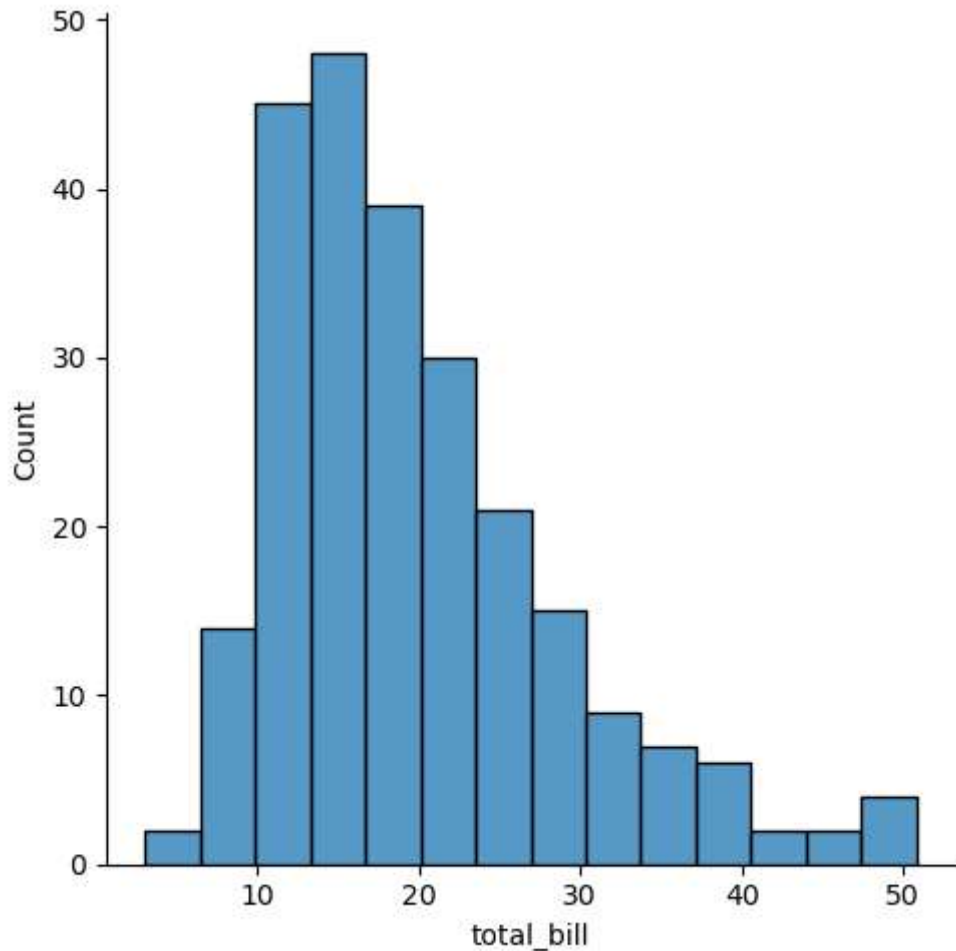
Visualizing Distributions

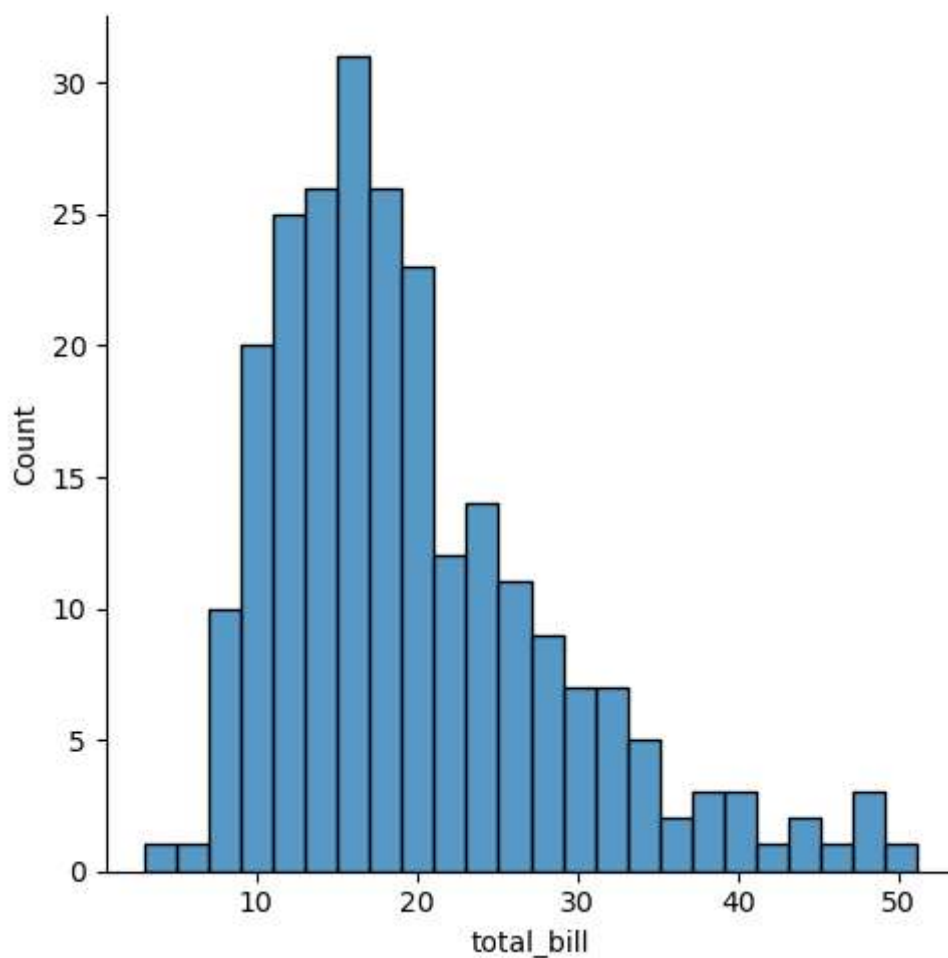# Histograms and Density Plots to visualize univariate distributions

In [42]:
```python
sns.displot(tips['total_bill']) # a figure-level function
```
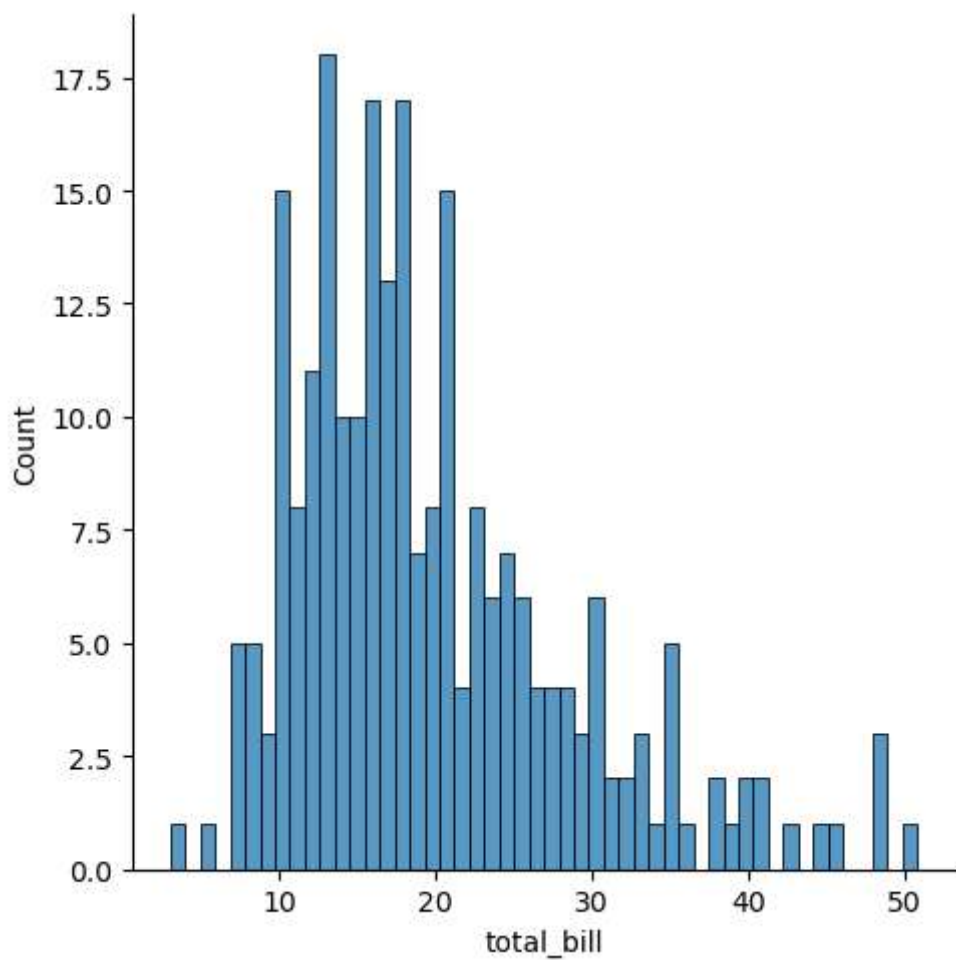
Out[42]: `<seaborn.axisgrid.FacetGrid at 0x267e8450880>`

In [43]:
```python
sns.displot(tips['total_bill'], binwidth=2) # a figure-level function with diff binwid
```
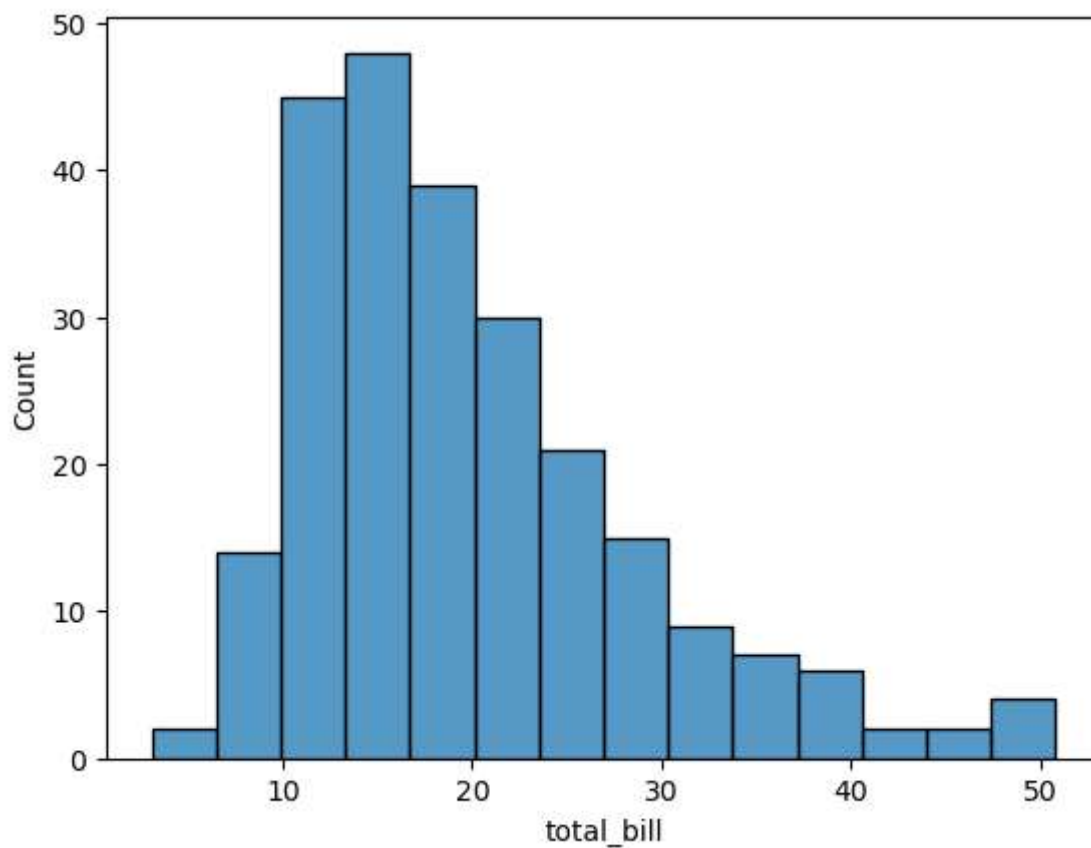
Out[43]: `<seaborn.axisgrid.FacetGrid at 0x267e8b2d190>`

```
In [44]:  sns.displot(tips['total_bill'], bins=50) # a figure-level function with diff number oj

Out[44]:  <seaborn.axisgrid.FacetGrid at 0x267e8be6580>
```

```
In [45]: sns.histplot(tips['total_bill']) # an axes-level function the same as the default sns.
```

```
Out[45]: <AxesSubplot:xlabel='total_bill', ylabel='Count'>
```

```
In [46]:  sns.displot(tips['total_bill'], kind='kde') # a figure-level function same as sns.kdep
```

```
Out[46]:  <seaborn.axisgrid.FacetGrid at 0x267e8d1bb20>
```
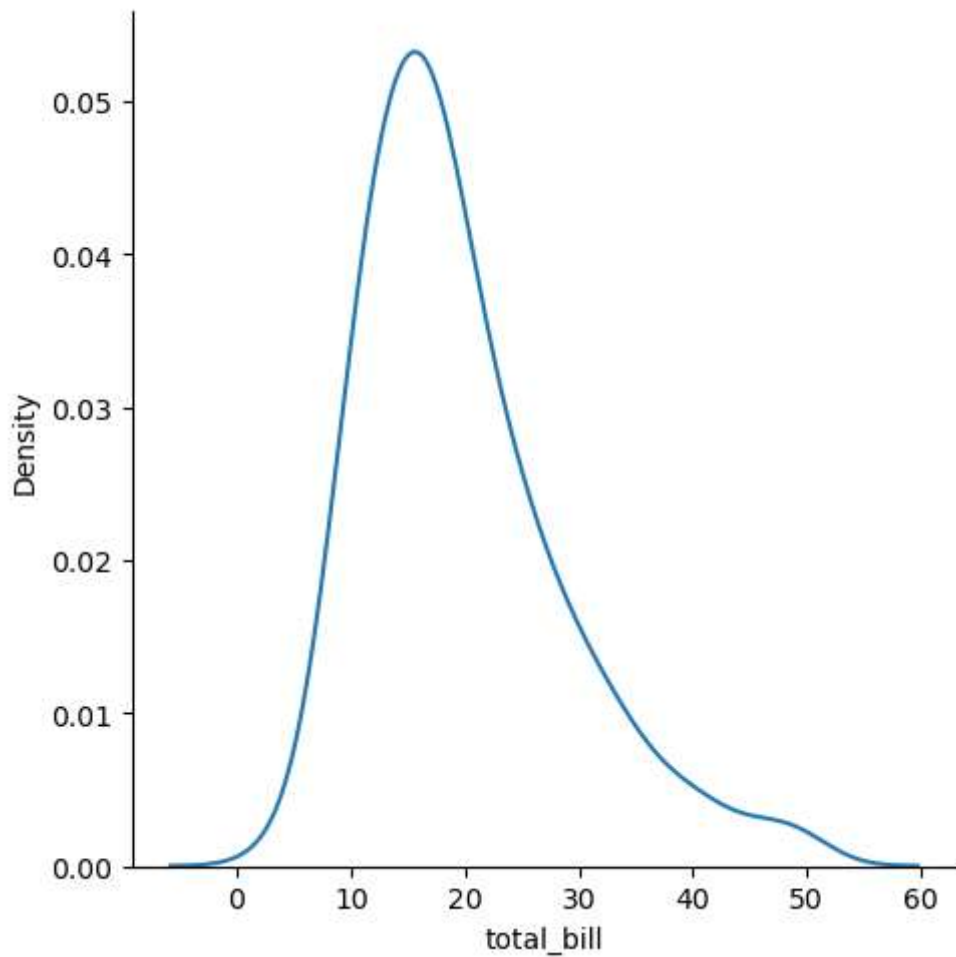
In [47]: `sns.displot(data=tips, x="total_bill", kind="kde")` *# a figure-level function, kernal d*

Out[47]: `<seaborn.axisgrid.FacetGrid at 0x267e8c3ce50>`
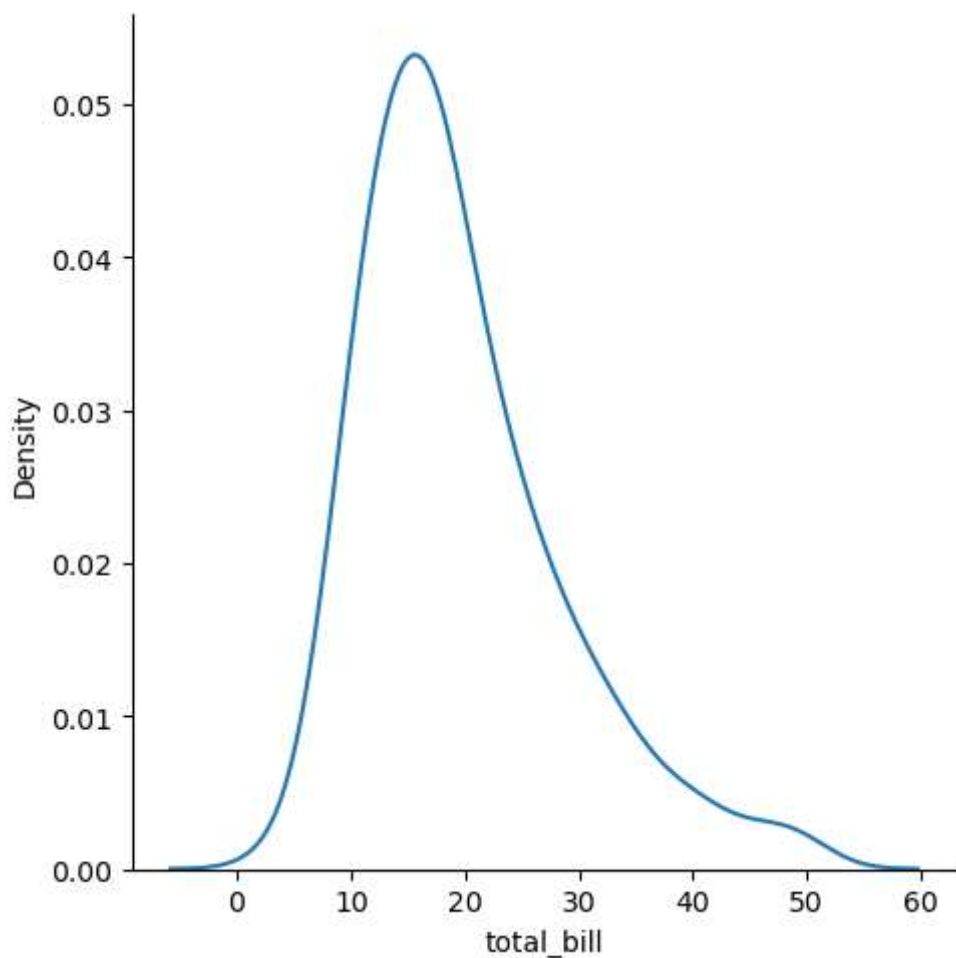
Adding another variable with hue (color)

In [48]:
```python
sns.displot(data=tips, x="total_bill", hue="sex", multiple="stack") # a figure-level j
```

Out[48]:
```
<seaborn.axisgrid.FacetGrid at 0x267e8ab5970>
```
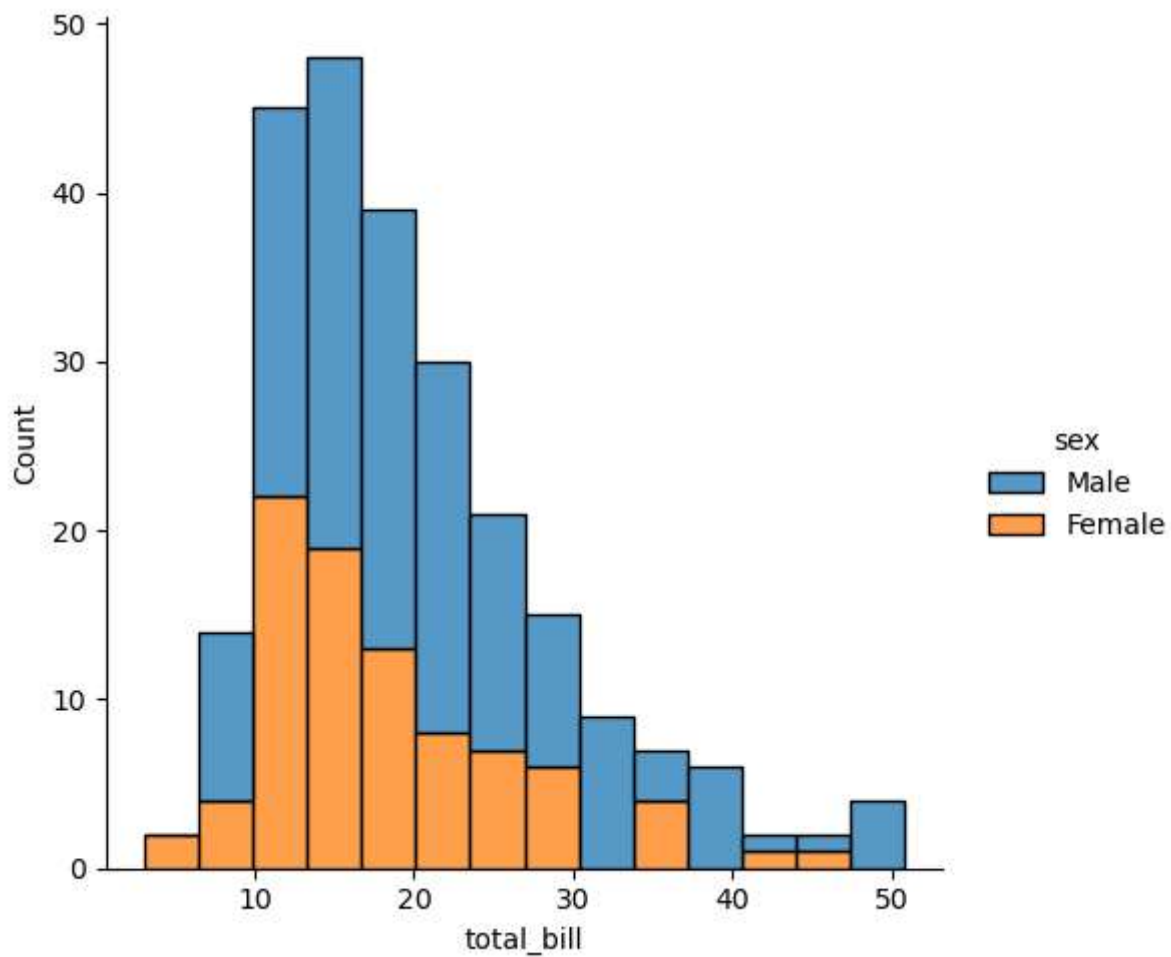
```
In [49]: sns.displot(data=tips, x="total_bill", hue="sex", multiple="stack", kind="kde") # a f
```

Out[49]:   `<seaborn.axisgrid.FacetGrid at 0x267ea01e580>`
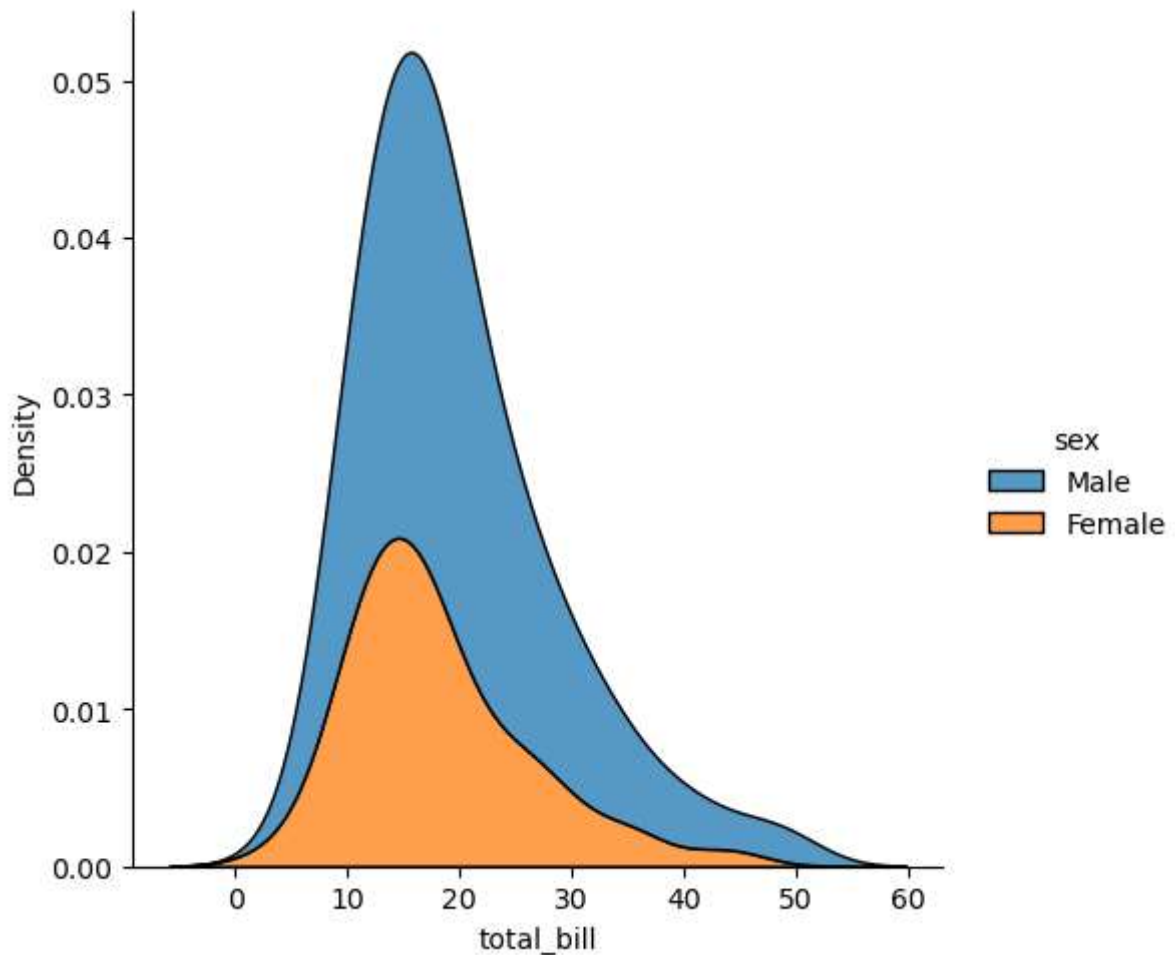
Facet across the columns

```
In [50]:  sns.displot(data=tips, x="total_bill", hue="sex", col="sex") # a figure-level function
```

Out[50]: `<seaborn.axisgrid.FacetGrid at 0x267ea07dee0>`
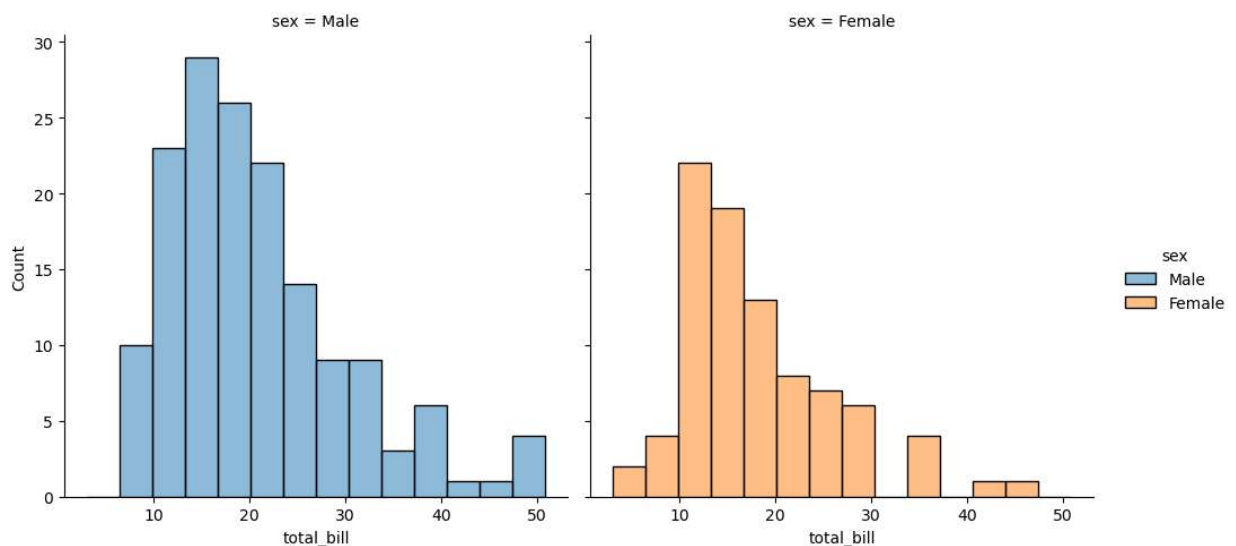

```
In [51]:  sns.displot(data=tips, x="total_bill", hue="day", col="day") # a figure-level function
```
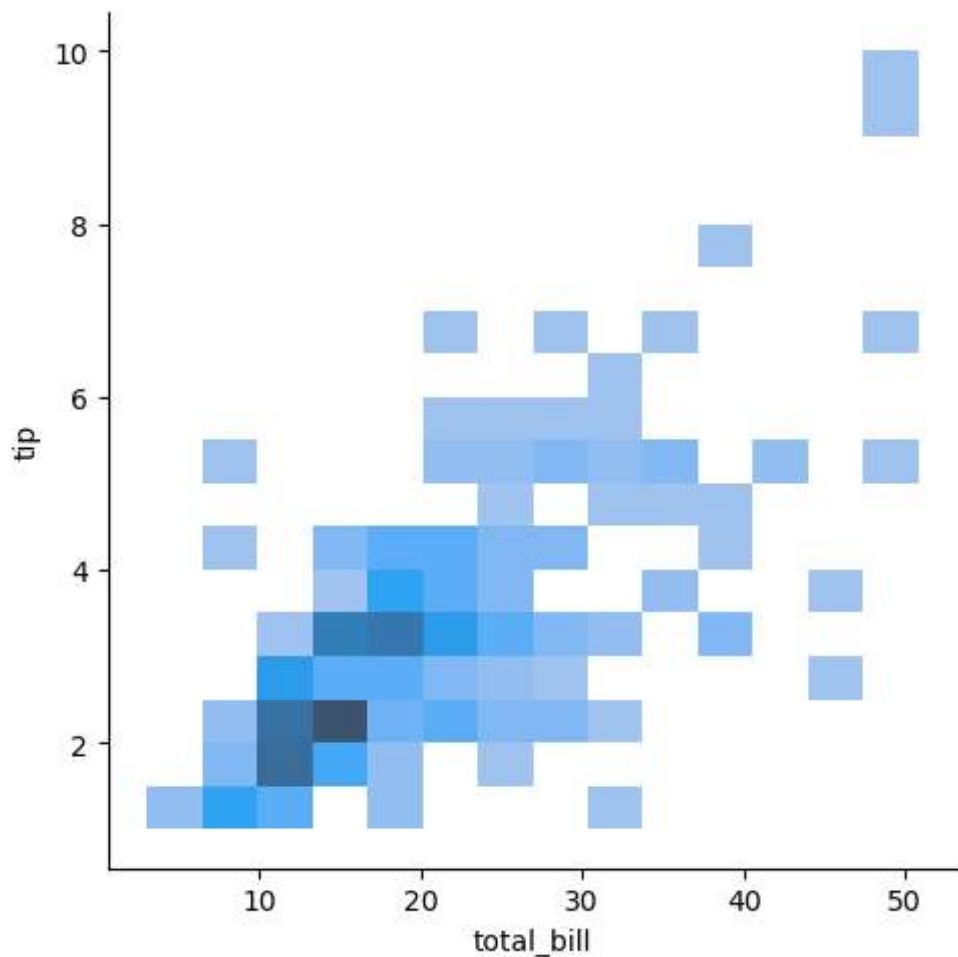
Out[51]: `<seaborn.axisgrid.FacetGrid at 0x267ea1e65b0>`
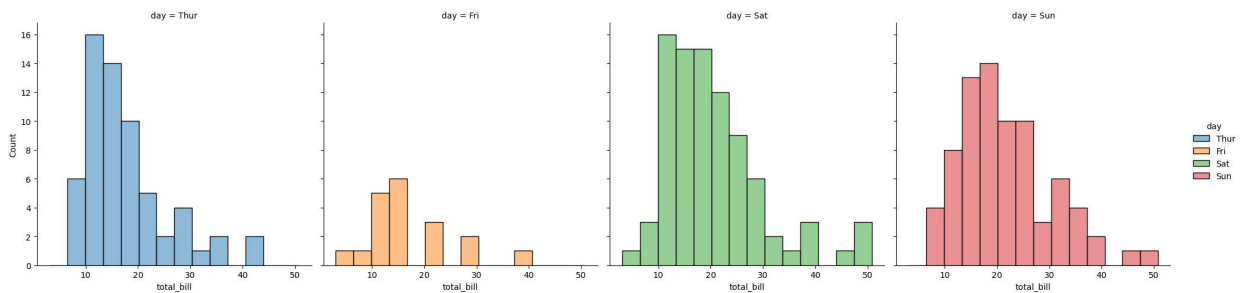
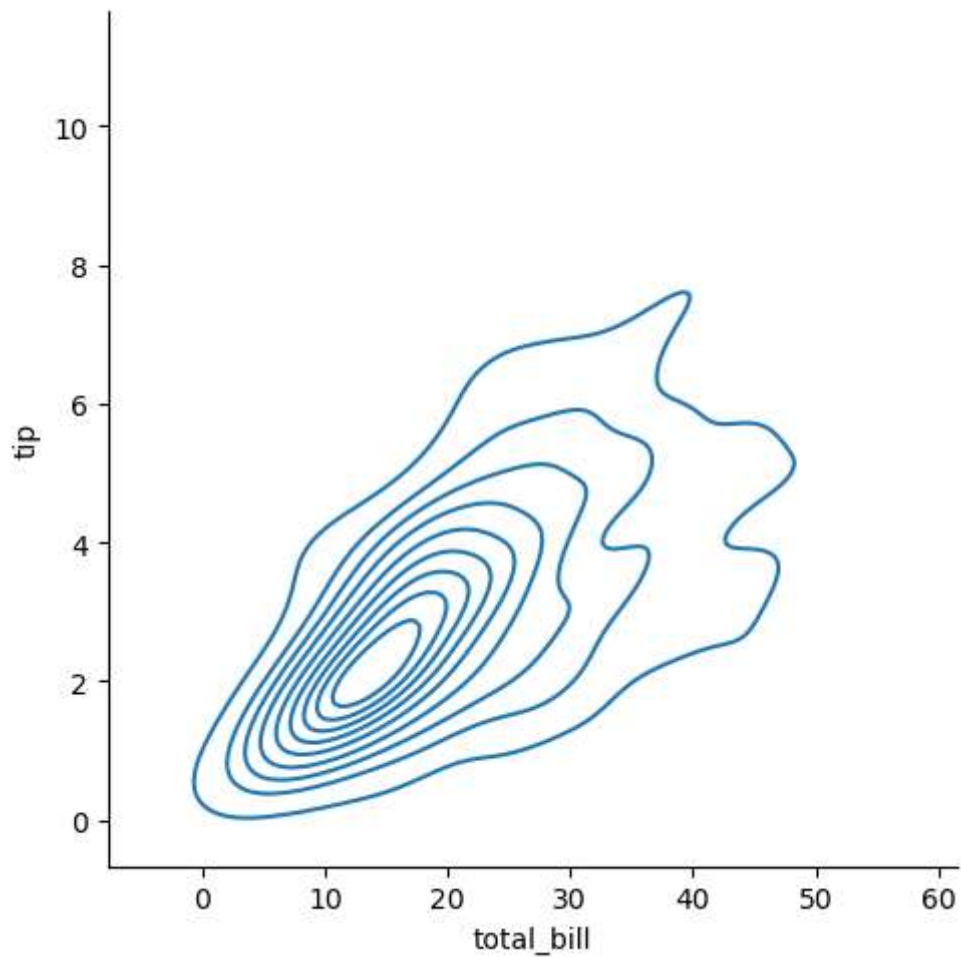# Visualizing Bivariate Distributions

Bivariate Histogram

In [52]: `sns.displot(data=tips, x="total_bill", y="tip")` *# here we specify both the x and the*
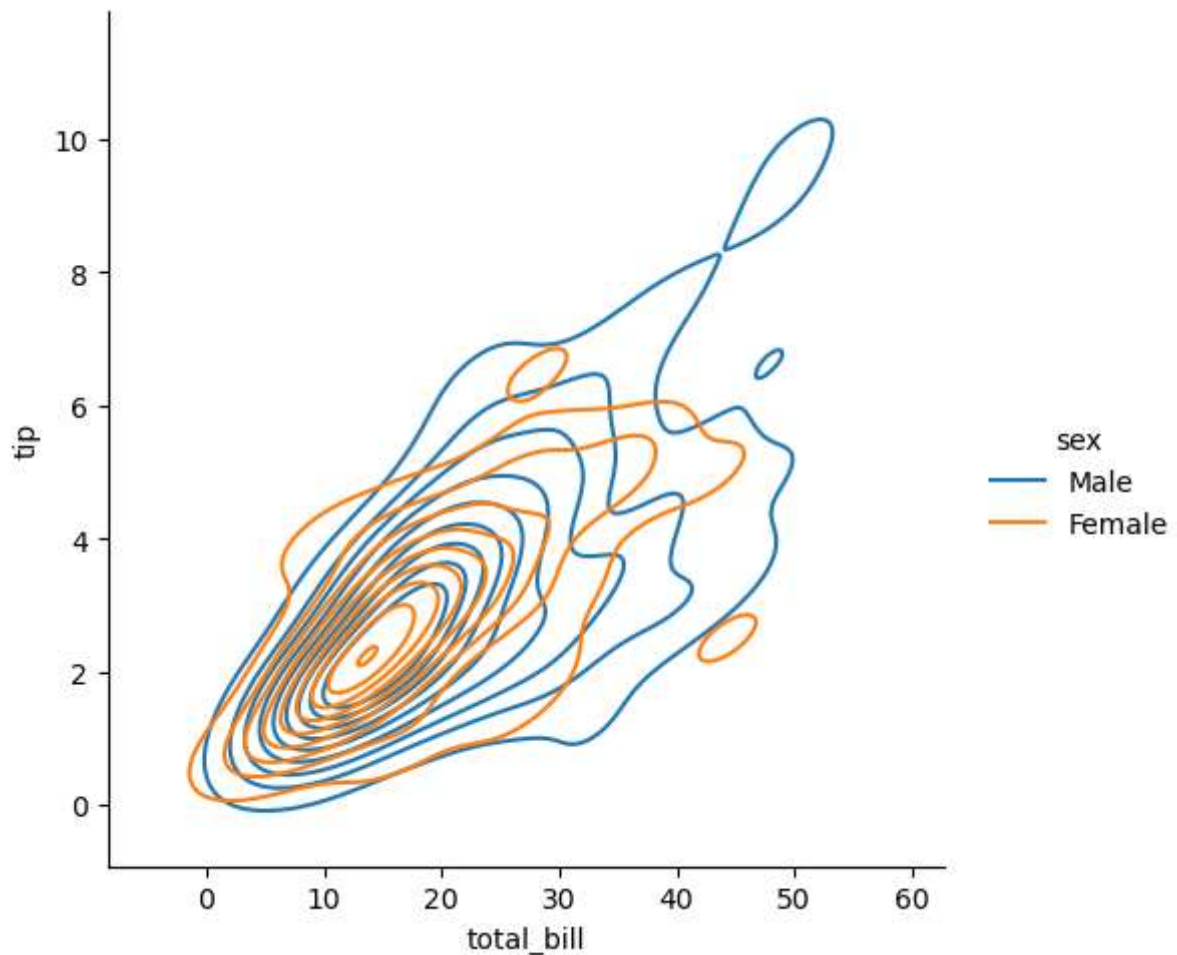
Out[52]: `<seaborn.axisgrid.FacetGrid at 0x267ea0e4130>`

In [53]: `sns.displot(data=tips, x="total_bill", y="tip", kind="kde")` *# same as above as a dens*

Out[53]: `<seaborn.axisgrid.FacetGrid at 0x267ea0375e0>`

In [54]: `sns.displot(data=tips, x="total_bill", y="tip", hue="sex", kind="kde")` *# adding a 3rd*
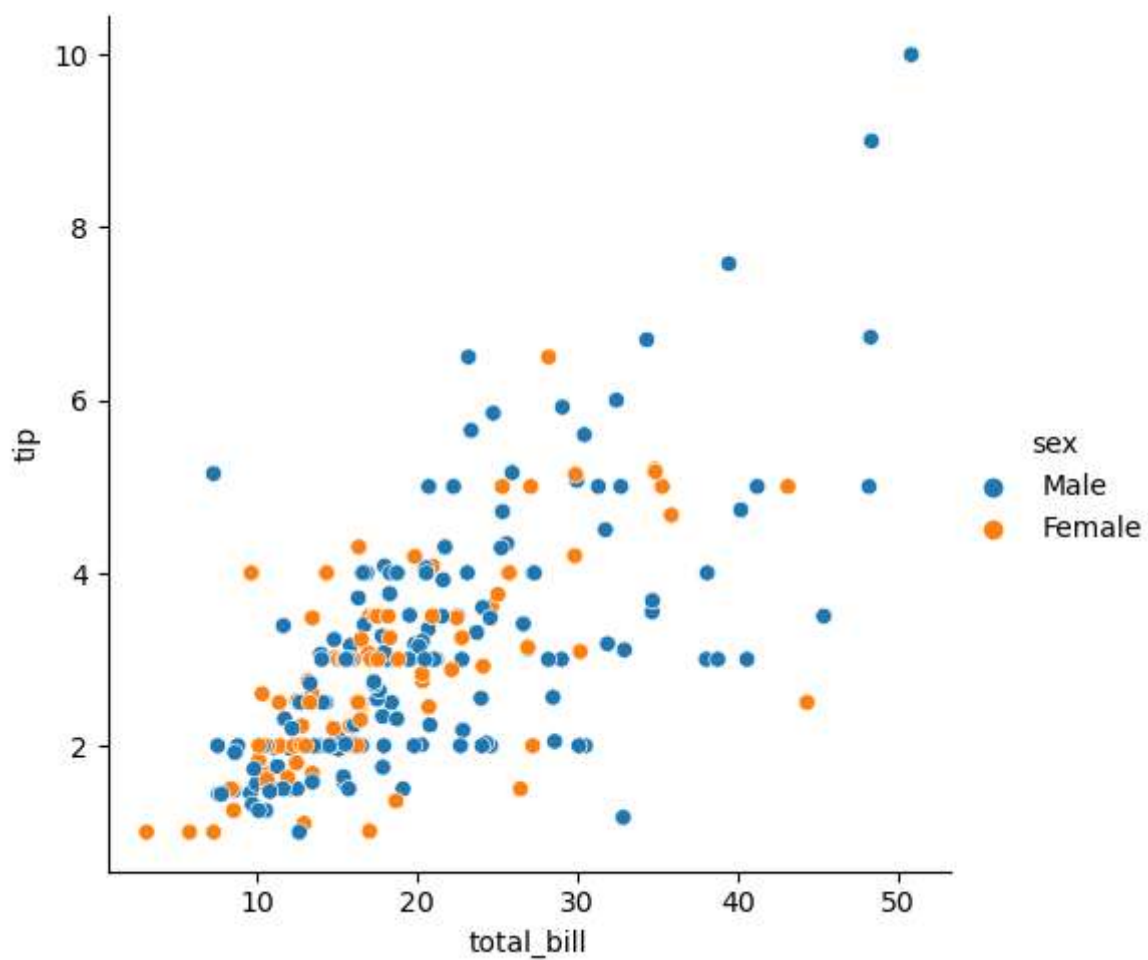
Out[54]: `<seaborn.axisgrid.FacetGrid at 0x267ea1d5f10>`

Visualizing the relationship between Multiple Variables with Scatter Plots
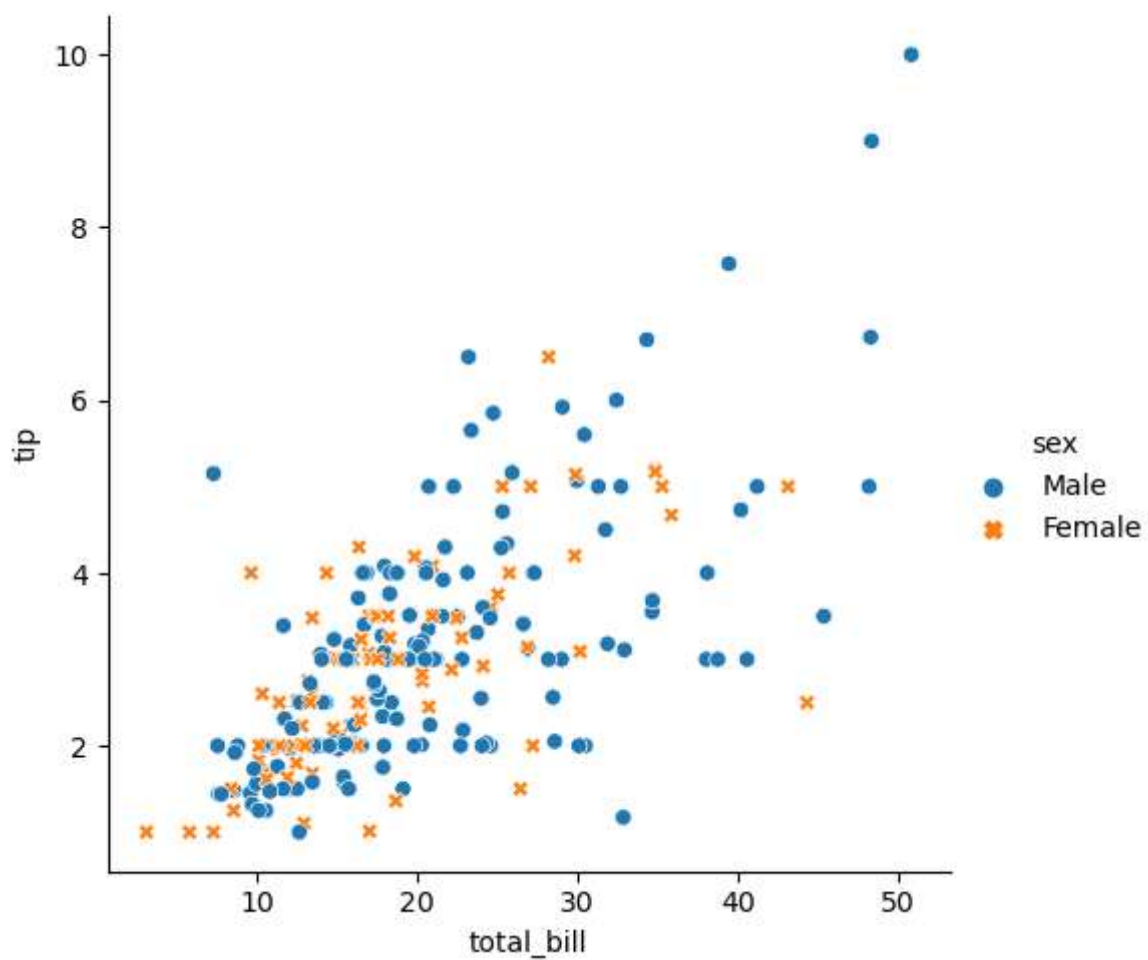
```
In [55]: sns.relplot(data=tips, x="total_bill", y="tip", hue="sex") # similar to above but uses
```

```
Out[55]: <seaborn.axisgrid.FacetGrid at 0x267ea8edee0>
```
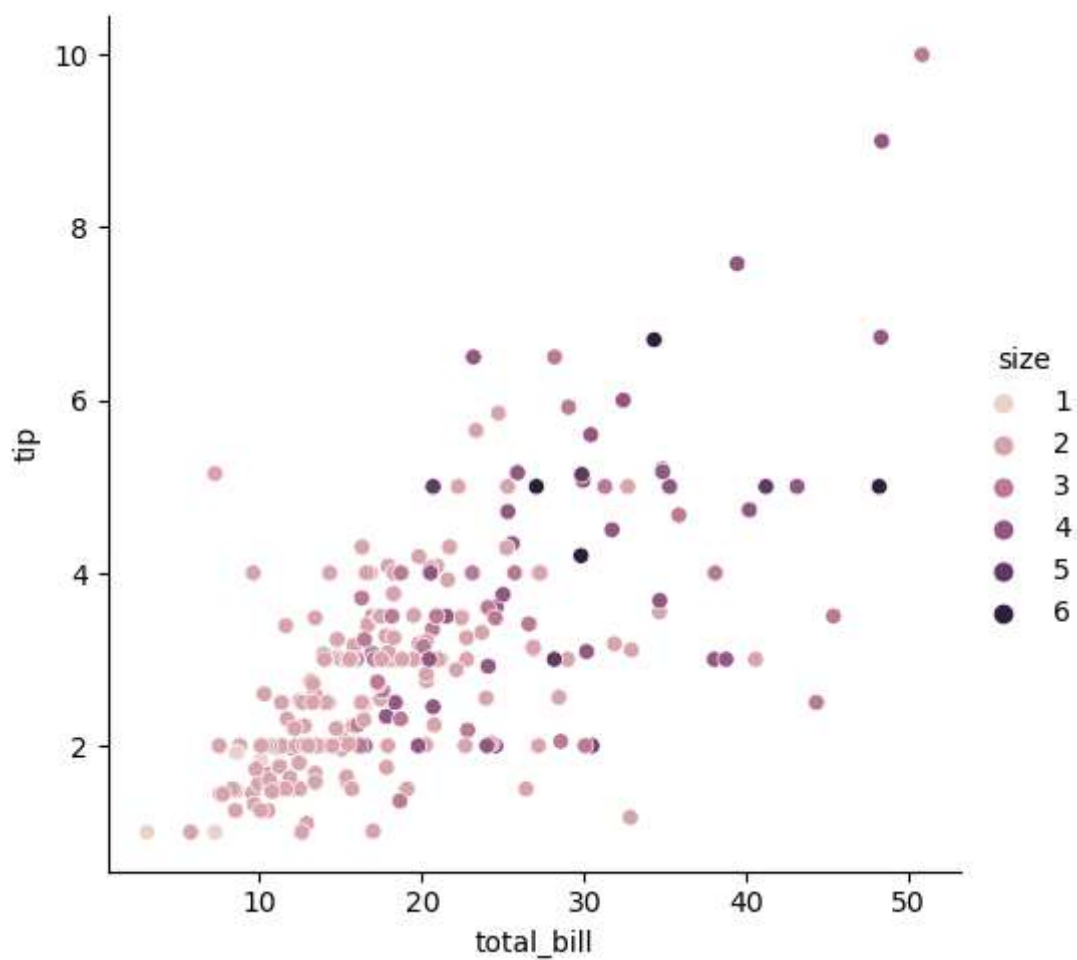
```
In [56]: sns.relplot(data=tips, x="total_bill", y="tip", hue="sex", style="sex") # adding marke
```
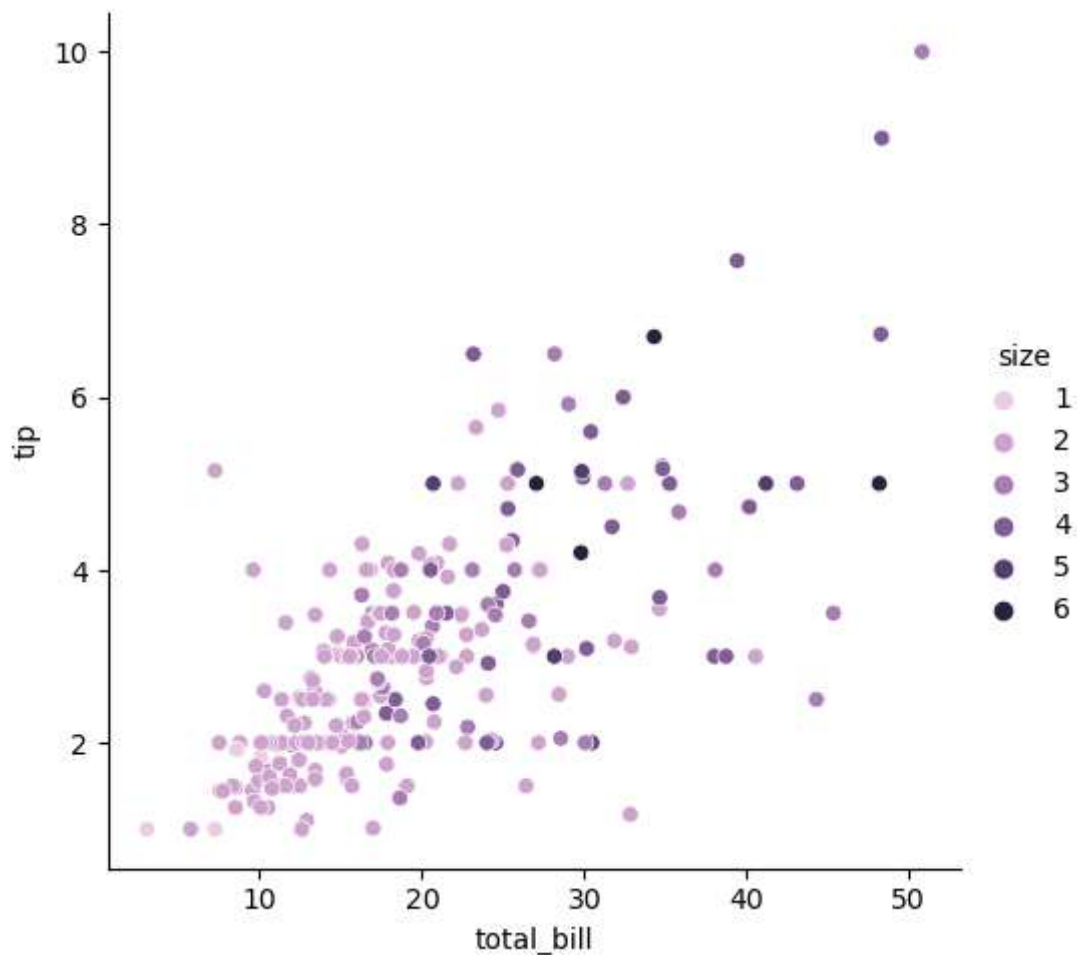
```
Out[56]: <seaborn.axisgrid.FacetGrid at 0x267ea8a6a60>
```

```
In [57]: sns.relplot(data=tips, x="total_bill", y="tip", hue="size") # added color as a numeri
```
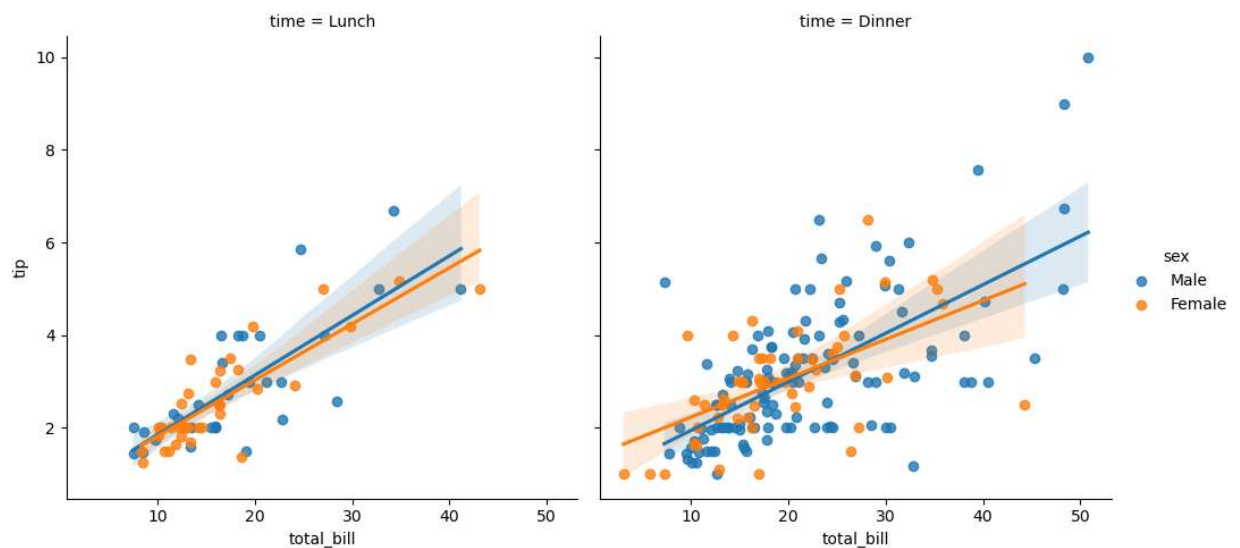
Out[57]: <seaborn.axisgrid.FacetGrid at 0x267eb037310>

In [58]: `sns.relplot(data=tips, x="total_bill", y="tip", hue="size", palette="ch:r=.2")` *#change*

Out[58]: `<seaborn.axisgrid.FacetGrid at 0x267ea4892e0>`

```
In [59]:   sns.lmplot(data=tips, x="total_bill", y="tip", col="time", hue="sex") # including a li
```
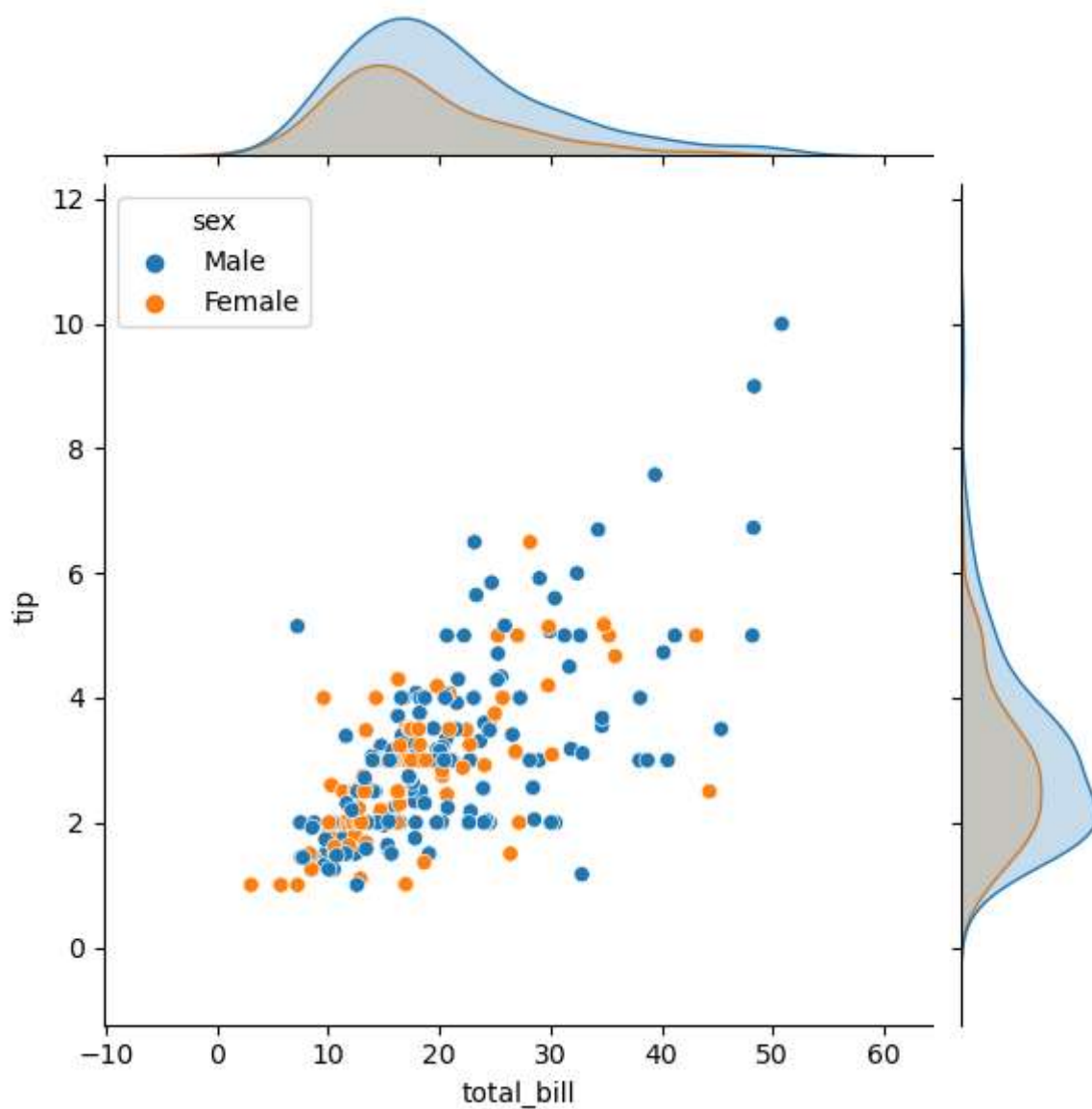
```
Out[59]:   <seaborn.axisgrid.FacetGrid at 0x267eb343be0>
```


Combination Plots - Scatter Plots with Distribution Plots

```
In [60]:   sns.jointplot(data=tips, x="total_bill", y="tip", hue="sex")
```

Out[60]:   `<seaborn.axisgrid.JointGrid at 0x267eb370d90>`

Line Plots - visualizing variables over time

In [61]:   `dj = sns.load_dataset("dowjones")` *# load new data set with time as an x variable*
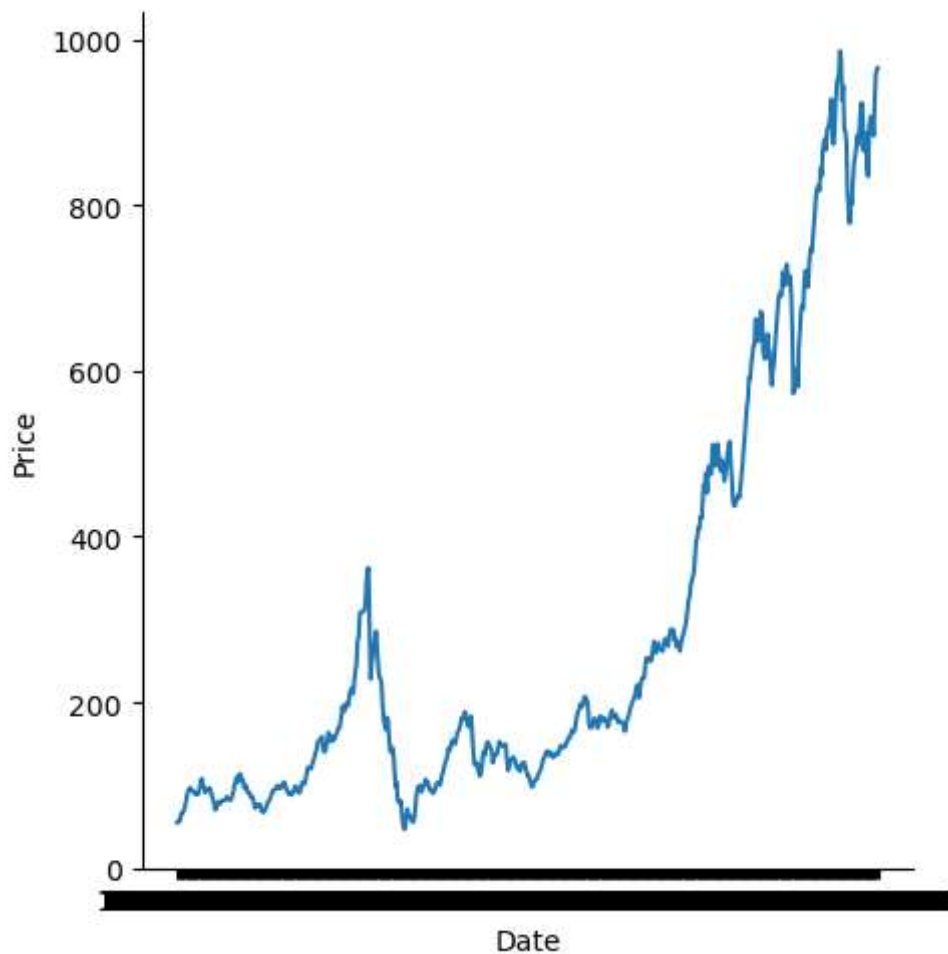
In [62]:   `print(dj)`

```
            Date      Price
0      1914-12-01     55.00
1      1915-01-01     56.55
2      1915-02-01     56.00
3      1915-03-01     58.30
4      1915-04-01     66.45
..            ...       ...
644    1968-08-01    883.72
645    1968-09-01    922.80
646    1968-10-01    955.47
647    1968-11-01    964.12
648    1968-12-01    965.39

[649 rows x 2 columns]
```

In [63]: `sns.relplot(data=dj, x="Date", y="Price", kind="line")`

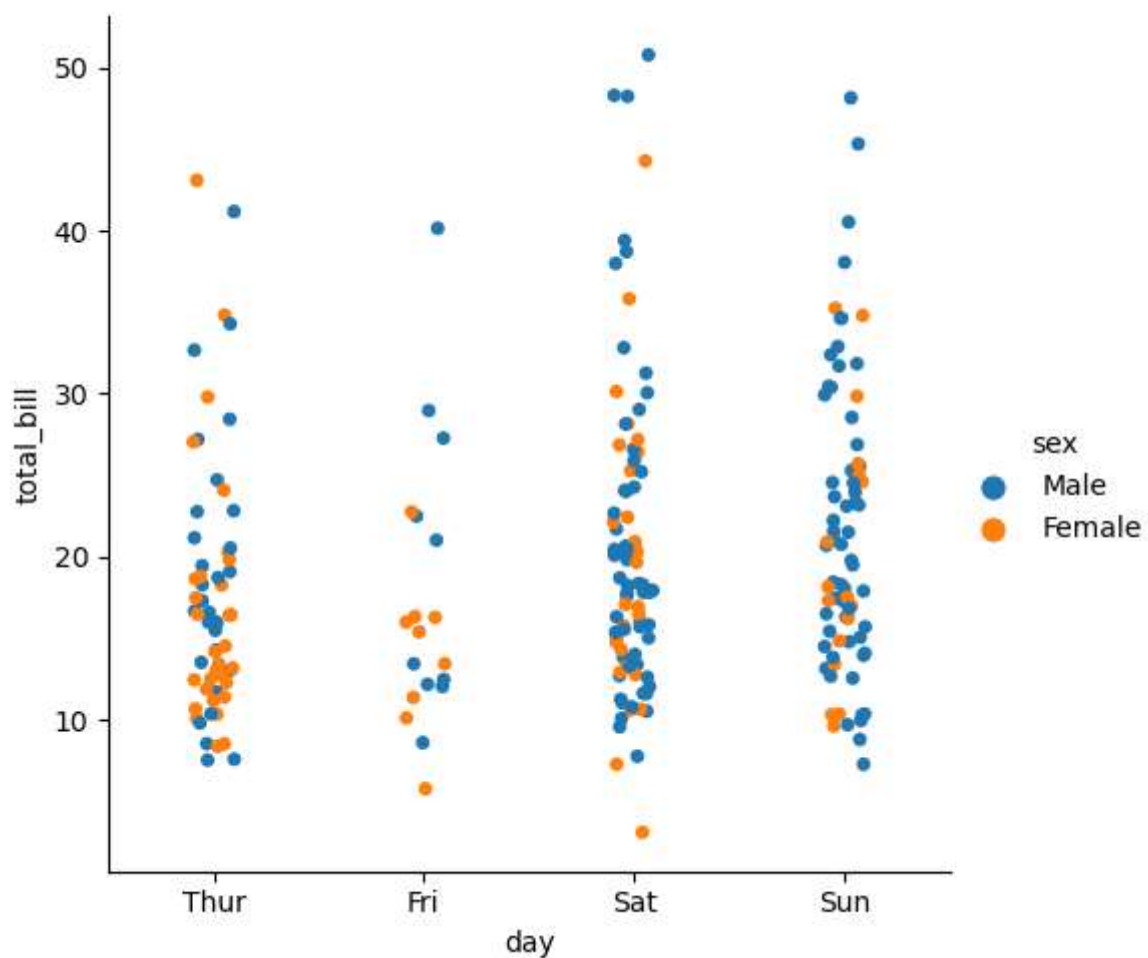Out[63]: `<seaborn.axisgrid.FacetGrid at 0x267ea840130>`

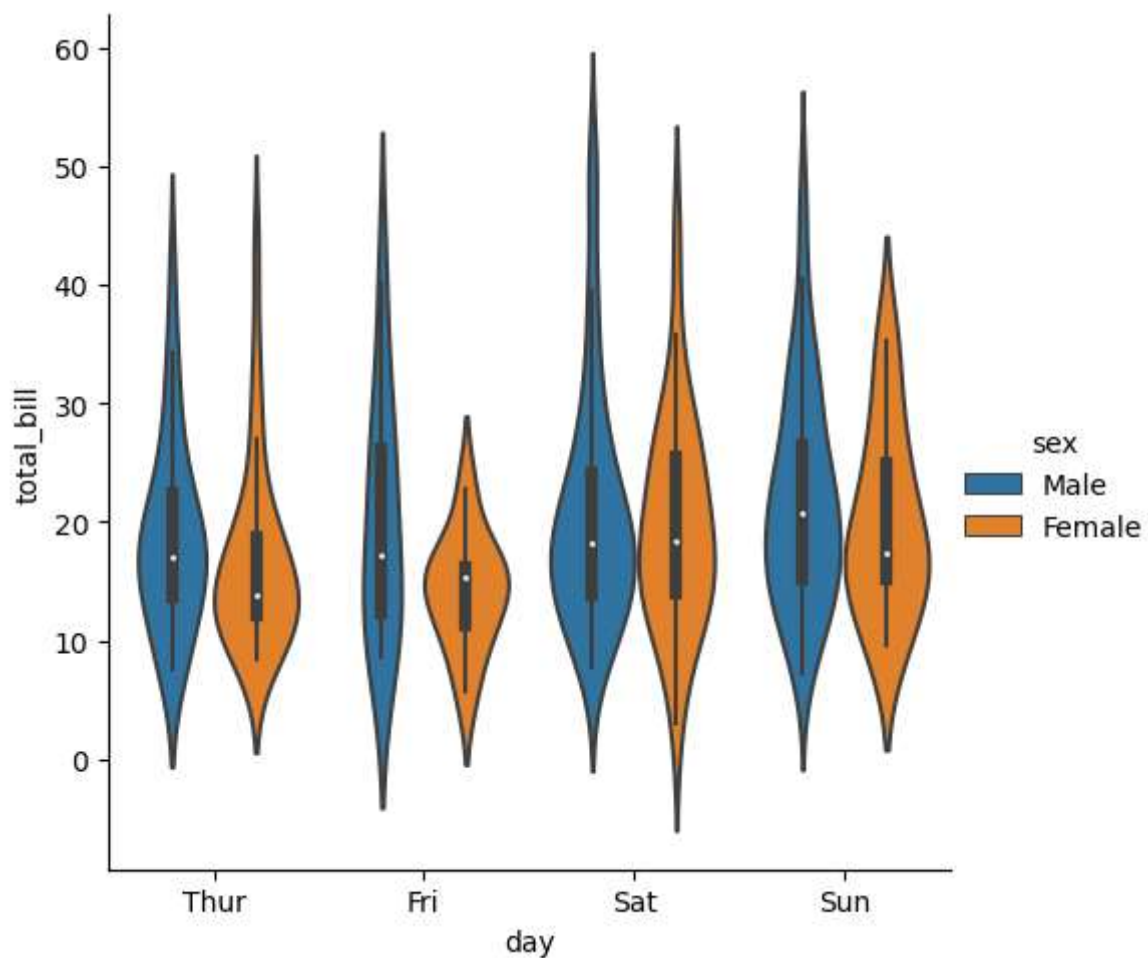# Categorical Plots

In [64]: `sns.catplot(data=tips, x="day", y="total_bill", hue="sex")`

Out[64]: `<seaborn.axisgrid.FacetGrid at 0x267e5861a60>`

```
In [65]:  sns.catplot(data=tips, x="day", y="total_bill", hue="sex", kind="violin")

Out[65]:  <seaborn.axisgrid.FacetGrid at 0x267ed12d8e0>
```

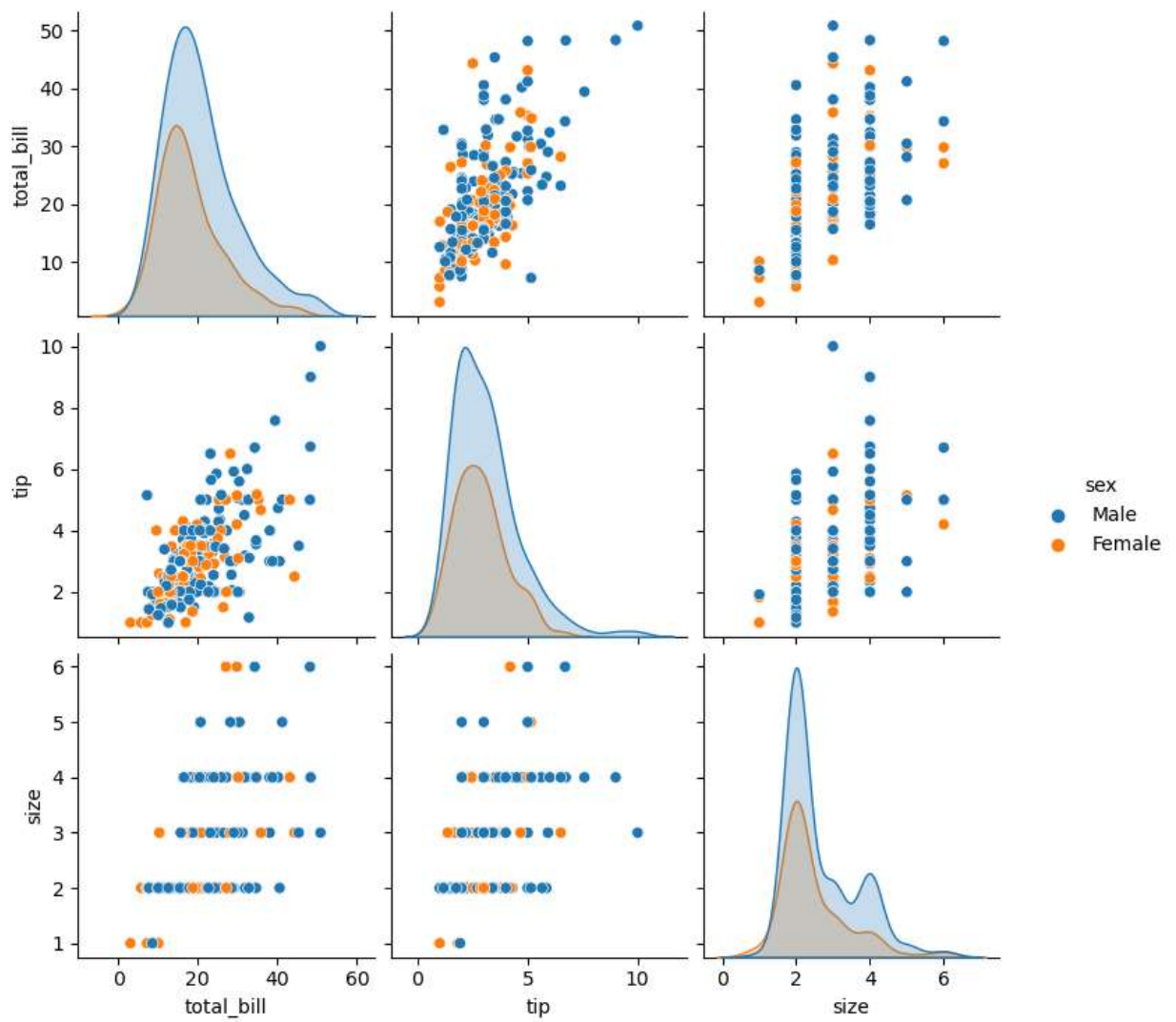# Pairplot

```
In [67]:   sns.pairplot(data=tips, hue="sex")
```

```
Out[67]:   <seaborn.axisgrid.PairGrid at 0x267ed12d400>
```

In [ ]: