

# LEVEL :- From Basics to Professional

## Programming Language:- Python

Libraries :- Seaborn, Matplotlib ,Pandas ,Numpy

### Python Seaborn Tutorial

#### How to draw Seaborn Lineplot ?

In [1]:

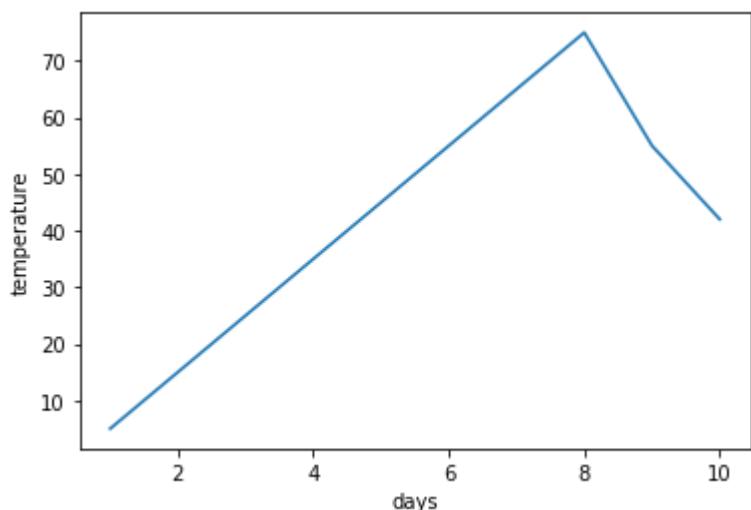
```
#Import libraries
import seaborn as sns # for data visualization
import pandas as pd # for data analysis
import matplotlib.pyplot as plt # for data visualization
```

```
"""" sns.lineplot( *, x=None, y=None, hue=None, size=None, style=None, data=None, palette=None,
hue_order=None, hue_norm=None, sizes=None, size_order=None, size_norm=None, dashes=True,
markers=None, style_order=None, units=None, estimator='mean', ci=95, n_boot=1000, seed=None,
sort=True, err_style='band', err_kws=None, legend='auto', ax=None, **kwargs, ) """"""
```

In [2]:

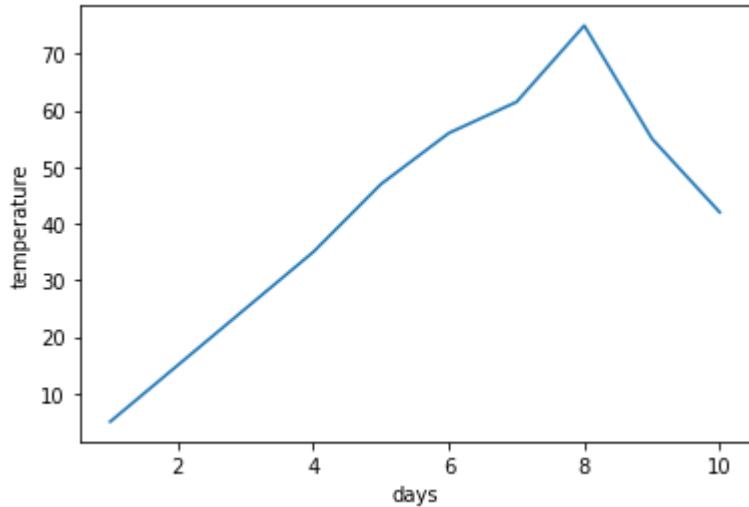
```
days = [1,2,3,4,5,6,7,8,9,10]
temperature = [5,15,25,35,45,55,65,75,55,42]
temp_df = pd.DataFrame({ "days":days, "temperature":temperature})
sns.lineplot(x = "days", y = "temperature", data=temp_df)
```

Out[2]:



In [3]:

```
days = [1,2,3,4,5,6,7,8,9,10]
temperature = [5,15,25,35,47,56,61.5,75,55,42]
temp_df = pd.DataFrame({ "days":days, "temperature":temperature})
sns.lineplot(x = "days", y = "temperature", data=temp_df)
plt.show()
```



```
In [4]: tips_df = sns.load_dataset("tips")
tips_df
```

```
Out[4]:
```

	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 [5]: tips_df.head(20)
```

```
Out[5]:
```

	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
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4

8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2
10	10.27	1.71	Male	No	Sun	Dinner	2
11	35.26	5.00	Female	No	Sun	Dinner	4
12	15.42	1.57	Male	No	Sun	Dinner	2
13	18.43	3.00	Male	No	Sun	Dinner	4
14	14.83	3.02	Female	No	Sun	Dinner	2
15	21.58	3.92	Male	No	Sun	Dinner	2
16	10.33	1.67	Female	No	Sun	Dinner	3
17	16.29	3.71	Male	No	Sun	Dinner	3
18	16.97	3.50	Female	No	Sun	Dinner	3
19	20.65	3.35	Male	No	Sat	Dinner	3

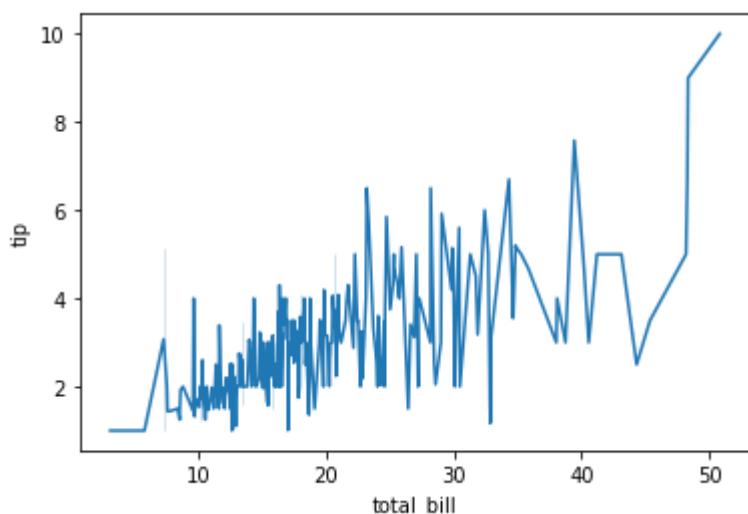
```
In [6]: tips_df.shape
```

```
Out[6]: (244, 7)
```

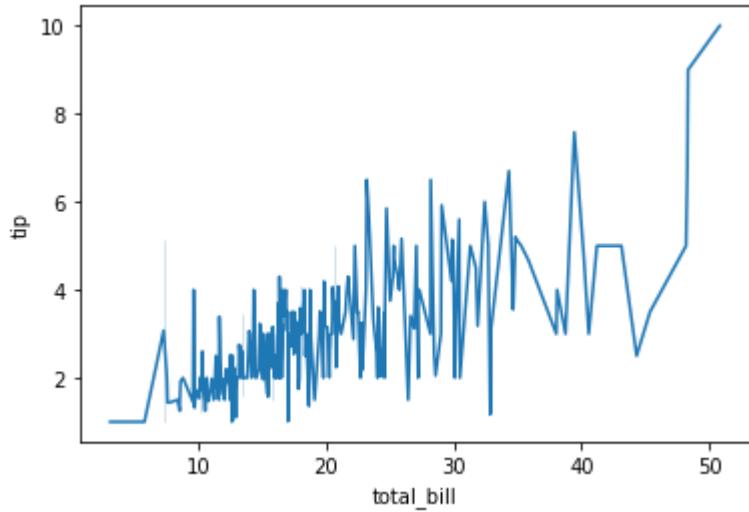
## Data

```
In [7]: sns.lineplot(x= "total_bill", y="tip", data = tips_df)
```

```
Out[7]: <AxesSubplot:xlabel='total_bill', ylabel='tip'>
```

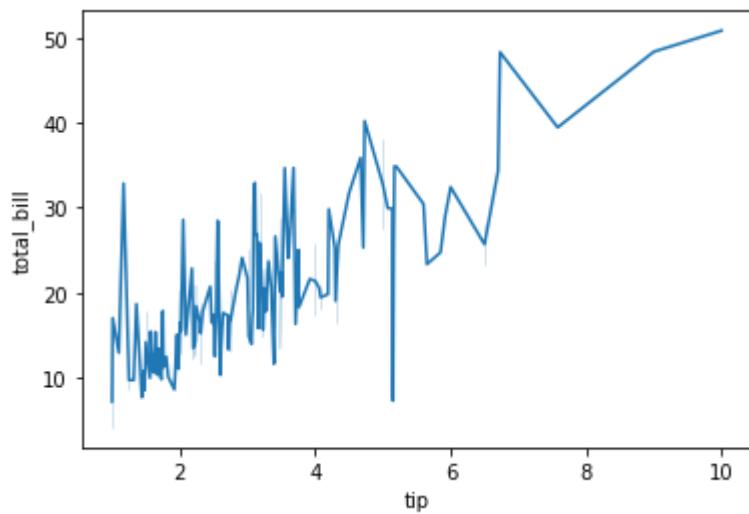


```
In [8]: sns.lineplot(x= "total_bill", y="tip", data = tips_df)  
plt.show()
```



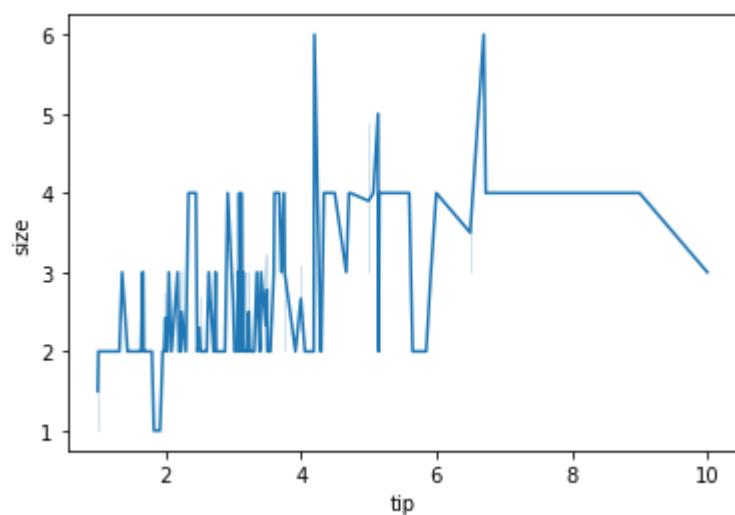
```
In [9]: sns.lineplot(x= "tip", y="total_bill", data = tips_df)
```

```
Out[9]: <AxesSubplot:xlabel='tip', ylabel='total_bill'>
```



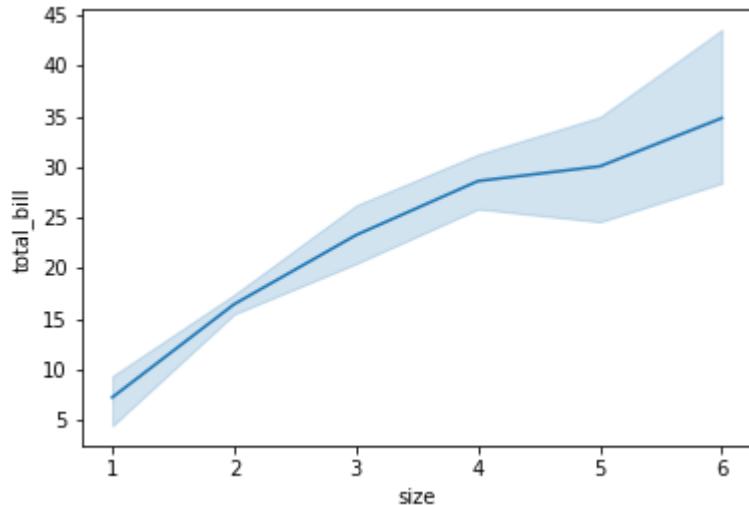
```
In [10]: sns.lineplot(x= "tip", y="size", data = tips_df)
```

```
Out[10]: <AxesSubplot:xlabel='tip', ylabel='size'>
```



```
In [11]: sns.lineplot(x= "size", y="total_bill", data = tips_df)
```

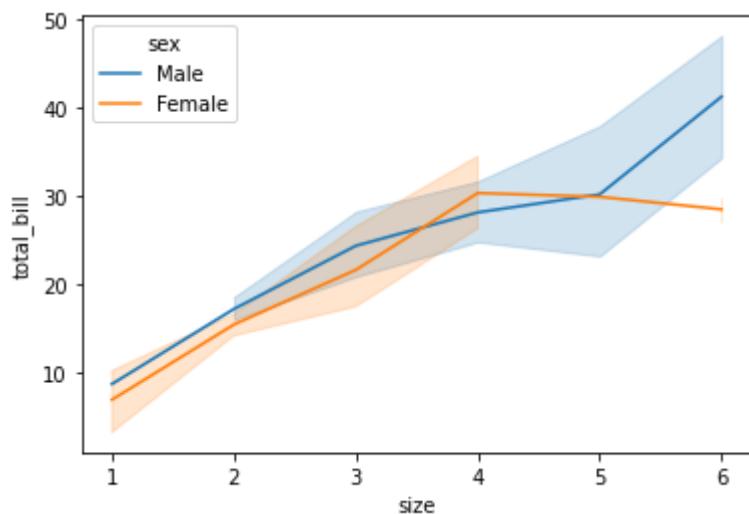
```
Out[11]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## Hue

```
In [12]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex")
```

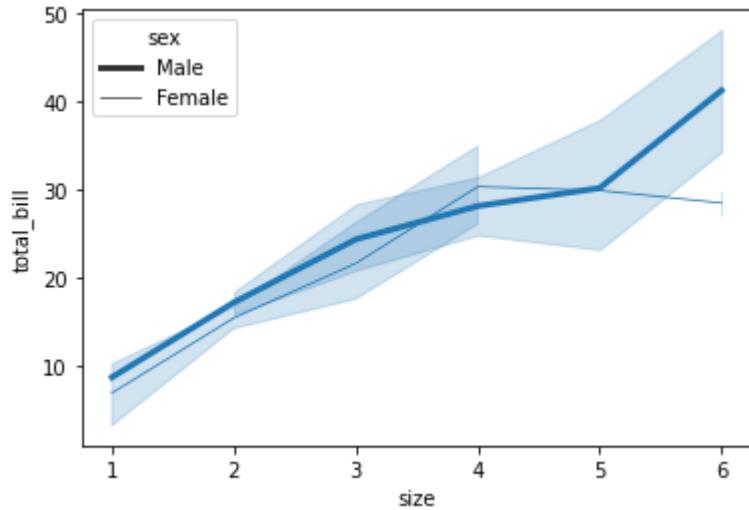
```
Out[12]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## Size

```
In [13]: sns.lineplot(x= "size", y="total_bill", data = tips_df, size = "sex")
```

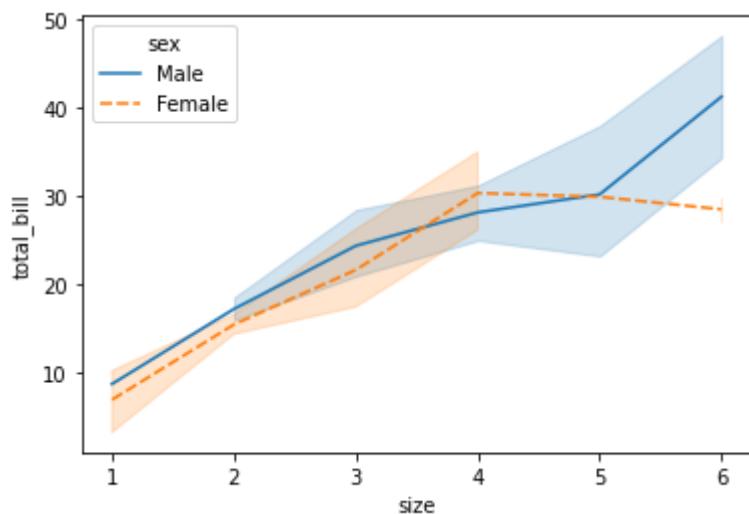
```
Out[13]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## Style

```
In [14]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", sty
```

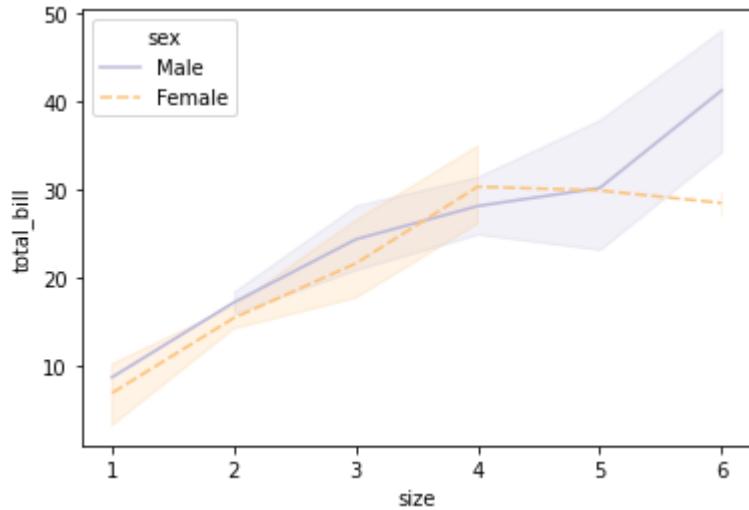
```
Out[14]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## Palette

```
In [15]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", sty
```

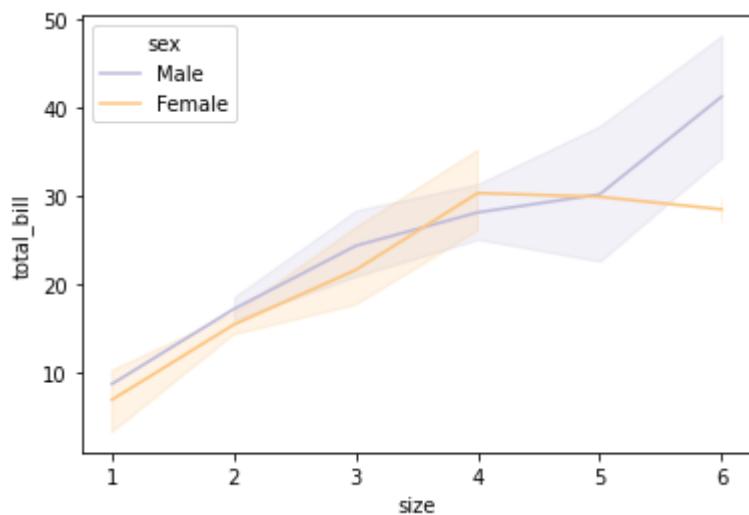
```
Out[15]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## Dashes :- False(w/o dashes), True(with dashes)

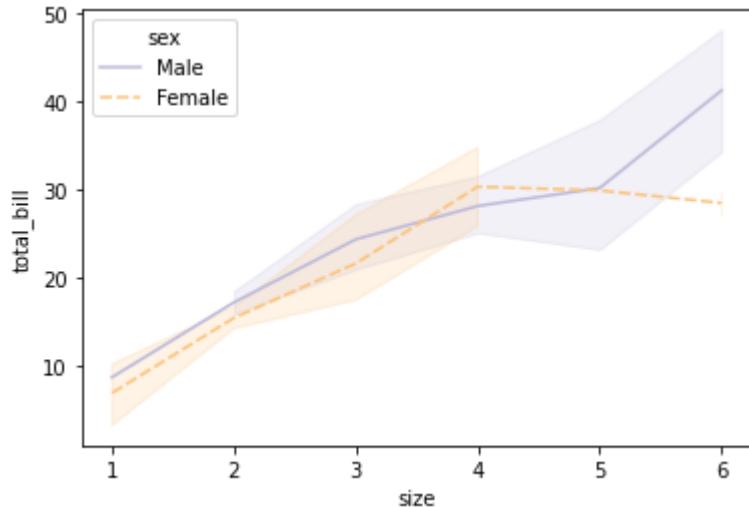
```
In [16]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", sty
```

```
Out[16]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



```
In [17]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", sty
```

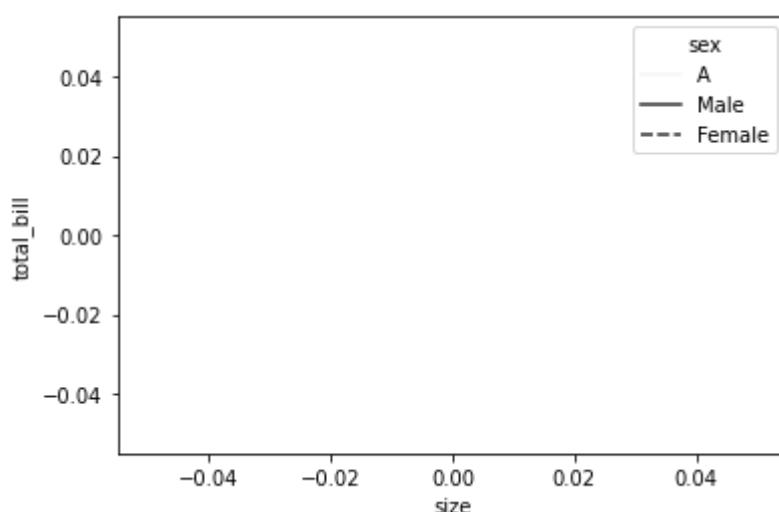
```
Out[17]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## hue\_order : vector of strings

```
In [18]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "A")
```

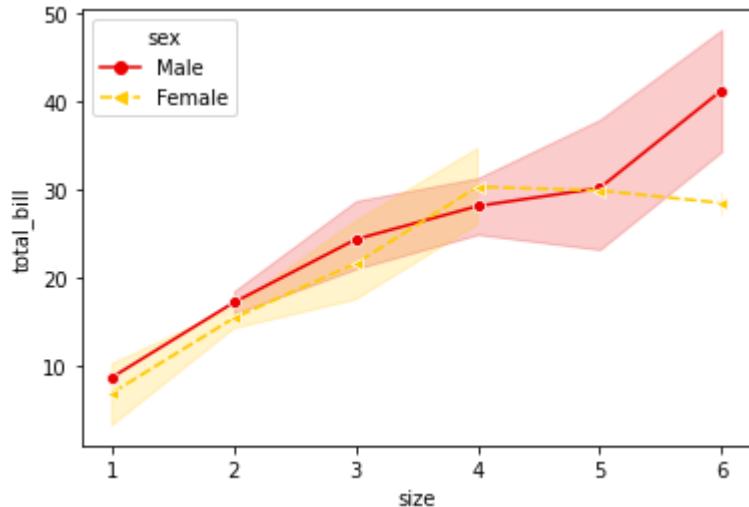
```
Out[18]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



**markers:-** to show point at marked locations

```
In [19]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "A", markers = ["o", "<"])
```

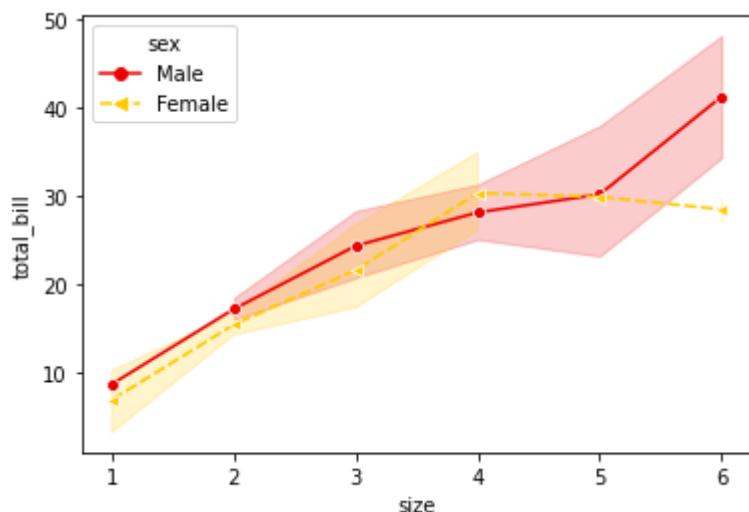
```
Out[19]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



**legend:-If "brief", numeric hue and size variables will be represented with a sample of evenly spaced values**

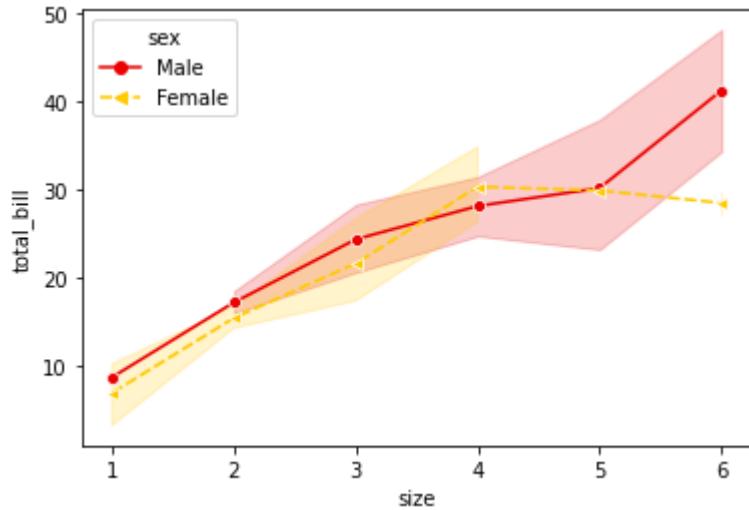
```
In [20]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "dashed", markers = ["o", "<"], legend = 'brief')
```

```
Out[20]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



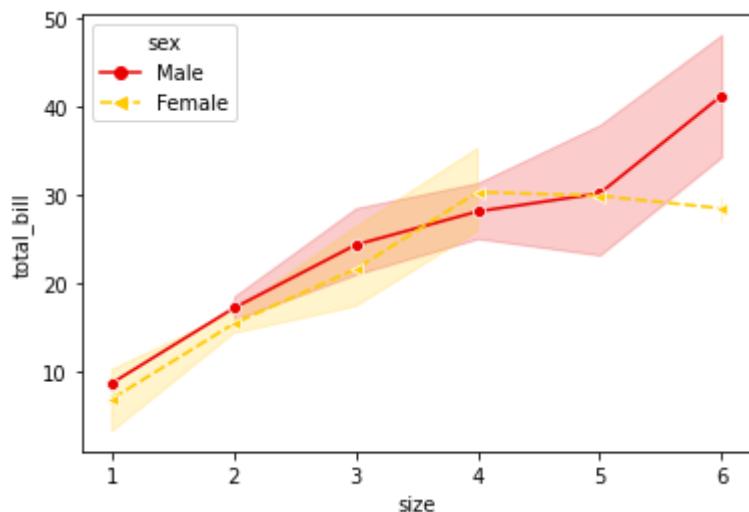
```
In [21]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "dashed", markers = ["o", "<"], legend = 'auto')
```

```
Out[21]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



```
In [22]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style= "dashed", markers = ["o", "<"], legend = 'full')
```

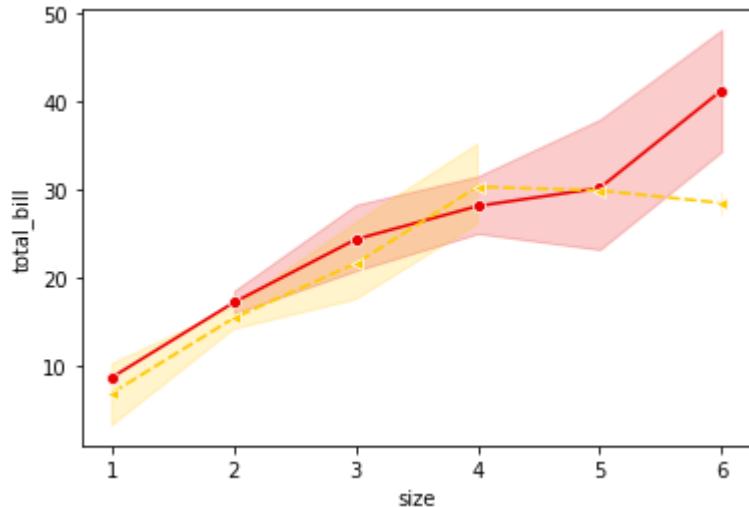
```
Out[22]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



## legend :- (selected as False)

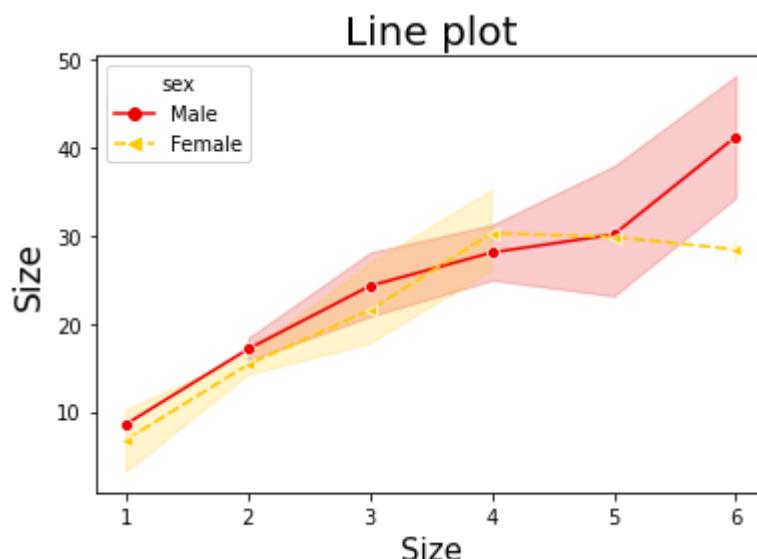
```
In [23]: sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style= "dashed", markers = ["o", "<"], legend = False)
```

```
Out[23]: <AxesSubplot:xlabel='size', ylabel='total_bill'>
```



In [24]:

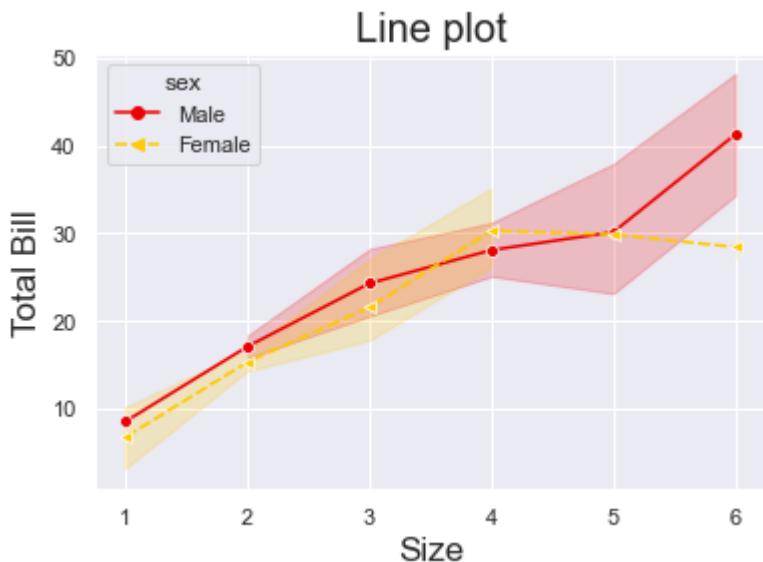
```
sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "brief",
             markers = ["o", "<"], legend = 'brief')
plt.title("Line plot", fontsize = 20)
plt.xlabel("Size", fontsize = 15)
plt.ylabel("Size", fontsize = 17)
plt.show()
```



## set():- To change the background

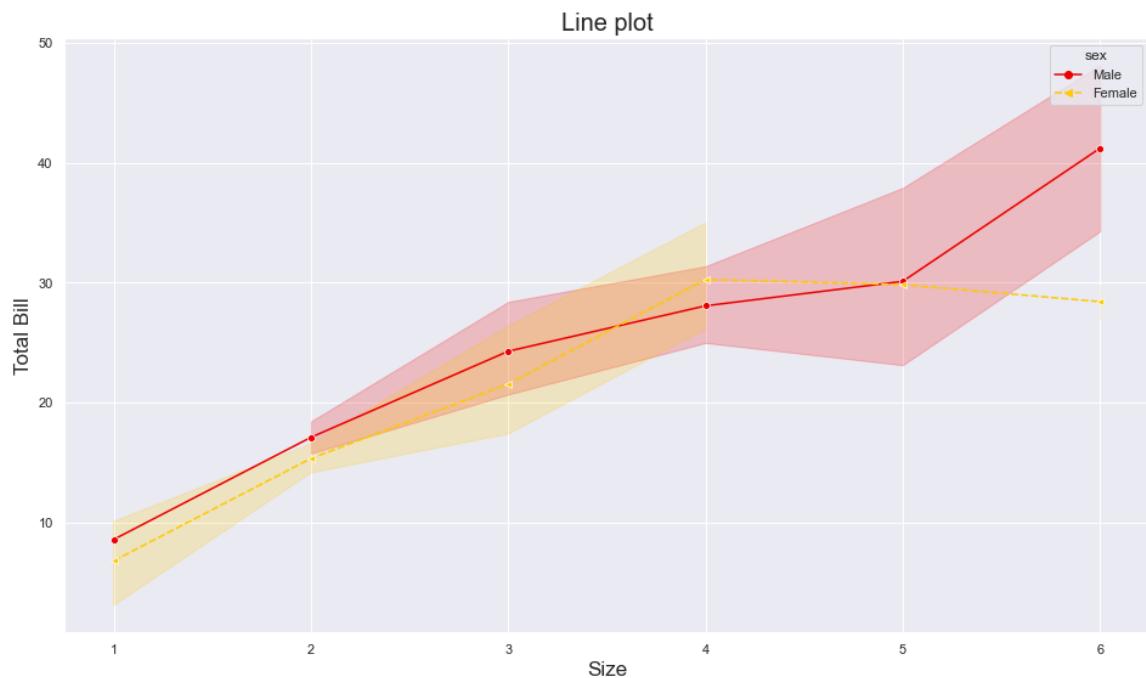
In [25]:

```
sns.set(style='darkgrid')
sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "brief",
             markers = ["o", "<"], legend = 'brief')
plt.title("Line plot", fontsize = 20)
plt.xlabel("Size", fontsize = 17)
plt.ylabel("Total Bill", fontsize = 17)
plt.show()
```



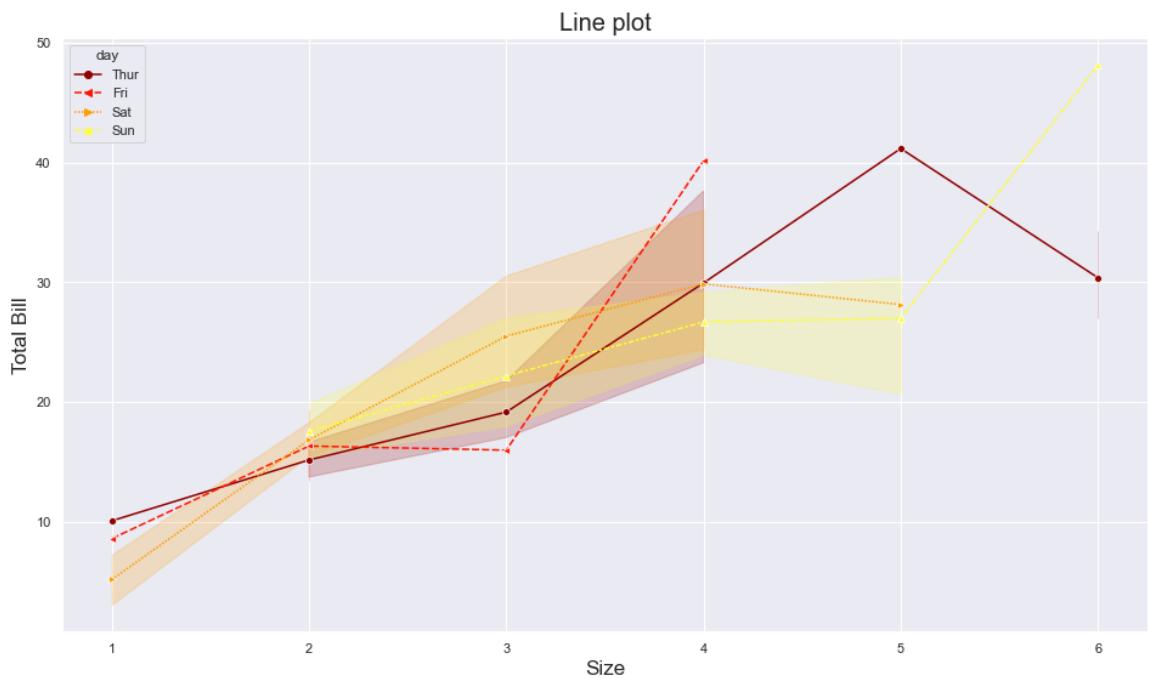
In [26]:

```
plt.figure(figsize = (16,9))
sns.set(style='darkgrid')
sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "sex", style = "dashed", markers = ["o","<"], legend = 'brief')
plt.title("Line plot", fontsize = 20)
plt.xlabel("Size", fontsize = 17)
plt.ylabel("Total Bill", fontsize = 17)
plt.show()
```



In [27]:

```
plt.figure(figsize = (16,9))
sns.set(style='darkgrid')
sns.lineplot(x= "size", y="total_bill", data = tips_df, hue = "day", style = "dashed", markers = ["o","<",">","^"], legend = 'brief')
plt.title("Line plot", fontsize = 20)
plt.xlabel("Size", fontsize = 17)
plt.ylabel("Total Bill", fontsize = 17)
plt.show()
```



## How to draw Seaborn Histogram & Seaborn Distplot

In [28]:

```
import seaborn as sns
```

In [29]:

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

Out[29]:

	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 [30]:

```
tips_df.head(20)
```

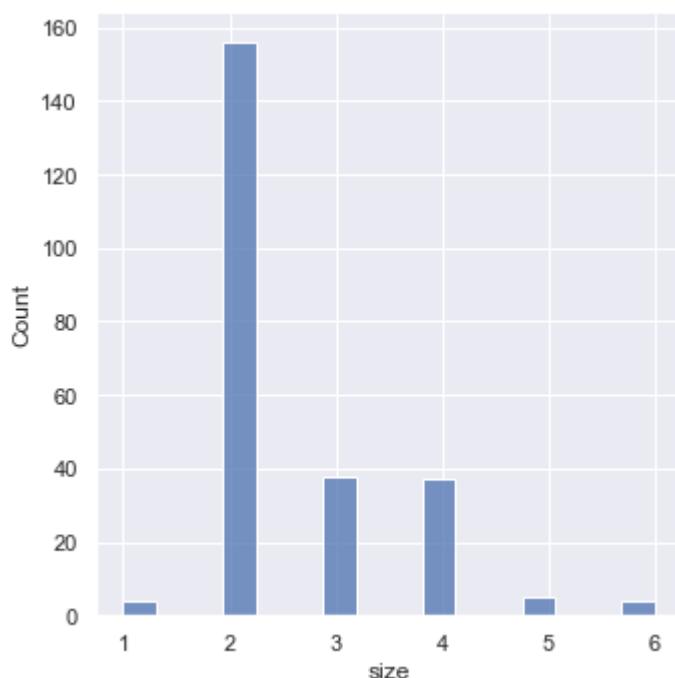
Out[30]:

	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
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4
8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2
10	10.27	1.71	Male	No	Sun	Dinner	2
11	35.26	5.00	Female	No	Sun	Dinner	4
12	15.42	1.57	Male	No	Sun	Dinner	2
13	18.43	3.00	Male	No	Sun	Dinner	4
14	14.83	3.02	Female	No	Sun	Dinner	2
15	21.58	3.92	Male	No	Sun	Dinner	2
16	10.33	1.67	Female	No	Sun	Dinner	3
17	16.29	3.71	Male	No	Sun	Dinner	3
18	16.97	3.50	Female	No	Sun	Dinner	3
19	20.65	3.35	Male	No	Sat	Dinner	3

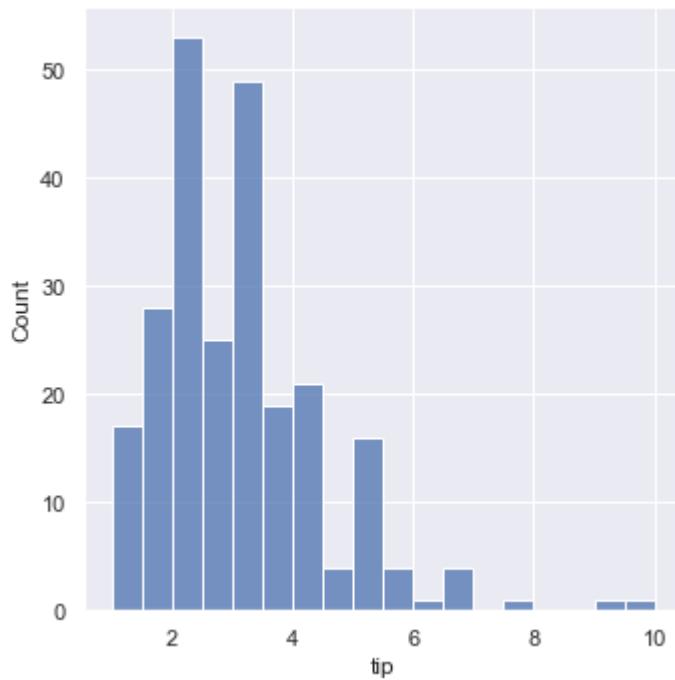
```
In [31]: sns.displot(tips_df["size"])
```

```
Out[31]: <seaborn.axisgrid.FacetGrid at 0x2094685c040>
```



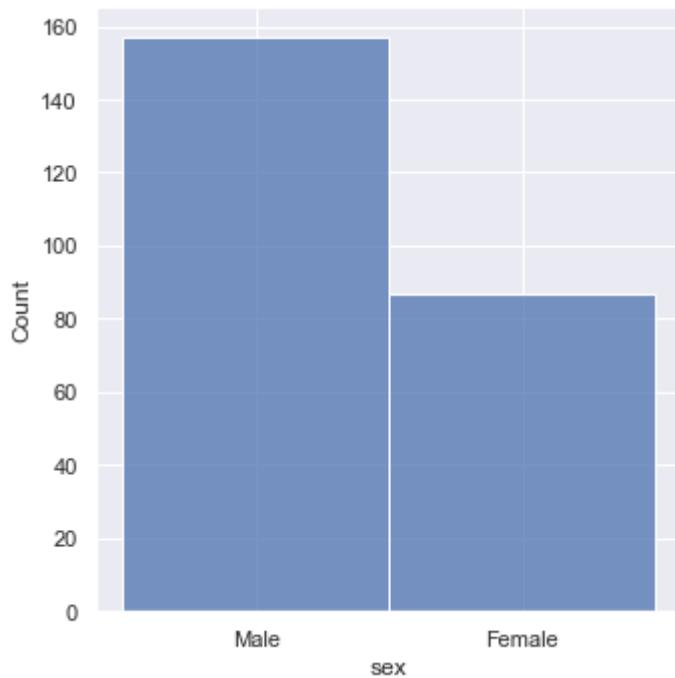
```
In [32]: sns.displot(tips_df["tip"])
```

```
Out[32]: <seaborn.axisgrid.FacetGrid at 0x209467f5580>
```



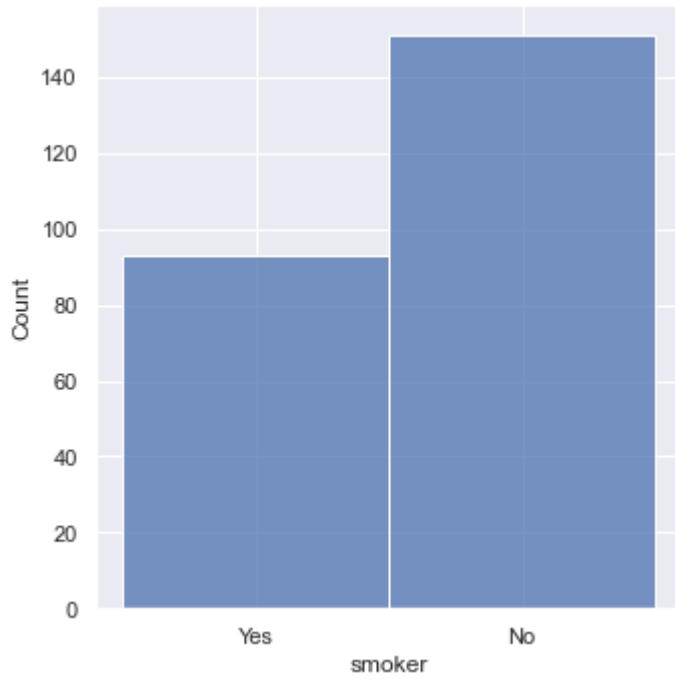
```
In [33]: sns.displot(tips_df["sex"])
```

```
Out[33]: <seaborn.axisgrid.FacetGrid at 0x20946ad8e50>
```



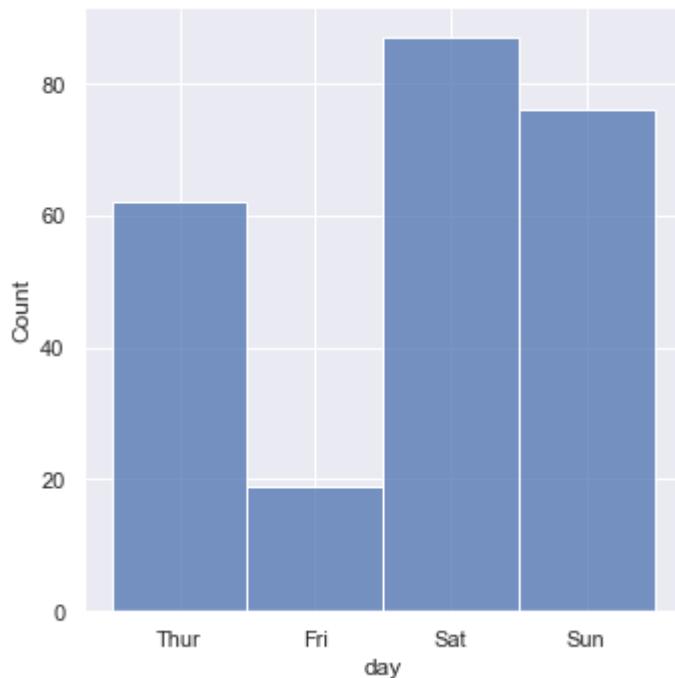
```
In [34]: sns.displot(tips_df["smoker"])
```

```
Out[34]: <seaborn.axisgrid.FacetGrid at 0x20946dfa4f0>
```



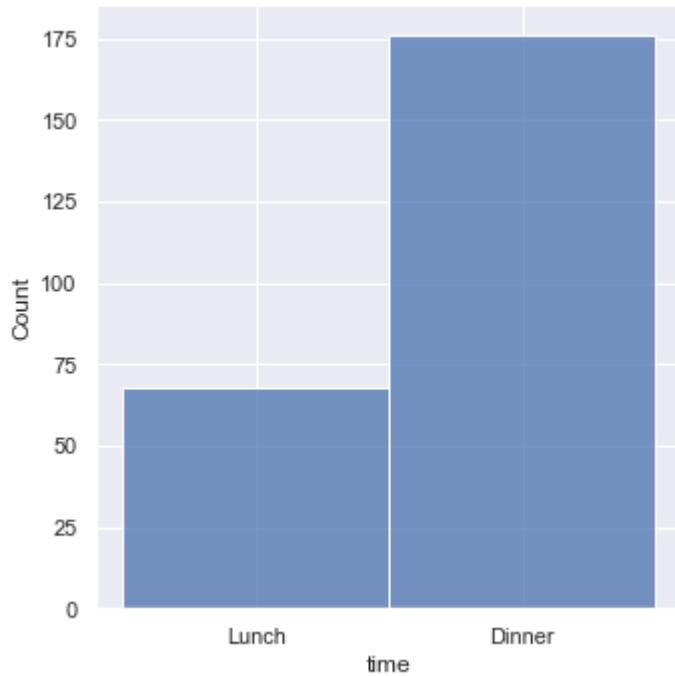
```
In [35]: sns.displot(tips_df["day"])
```

```
Out[35]: <seaborn.axisgrid.FacetGrid at 0x20946e441c0>
```



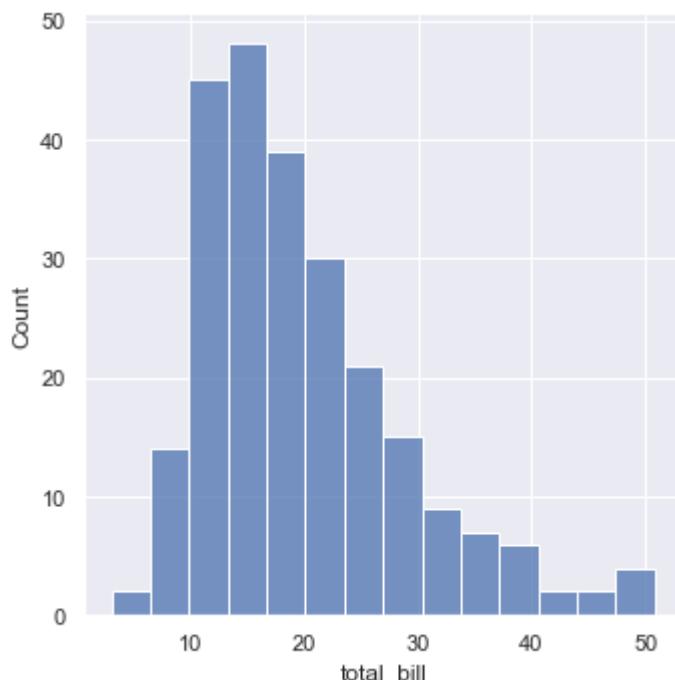
```
In [36]: sns.displot(tips_df["time"])
```

```
Out[36]: <seaborn.axisgrid.FacetGrid at 0x20946deee80>
```



```
In [37]: sns.displot(tips_df["total_bill"])
```

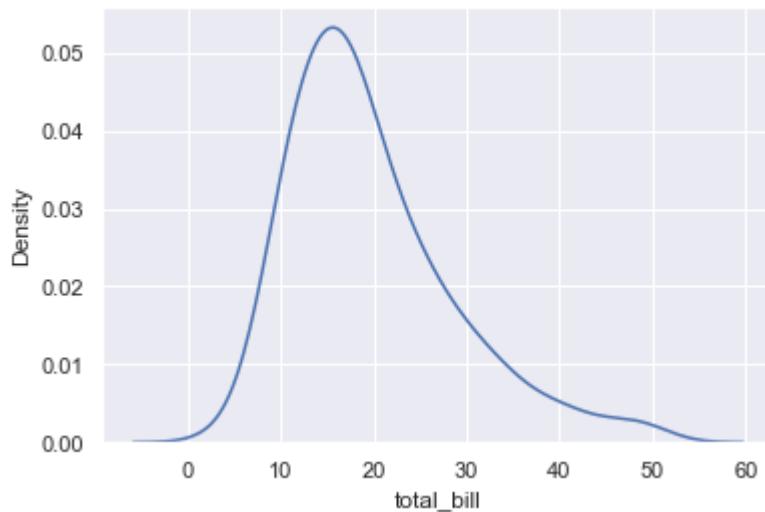
```
Out[37]: <seaborn.axisgrid.FacetGrid at 0x20946eb13d0>
```



## KDE:- Kernel Density Estimate

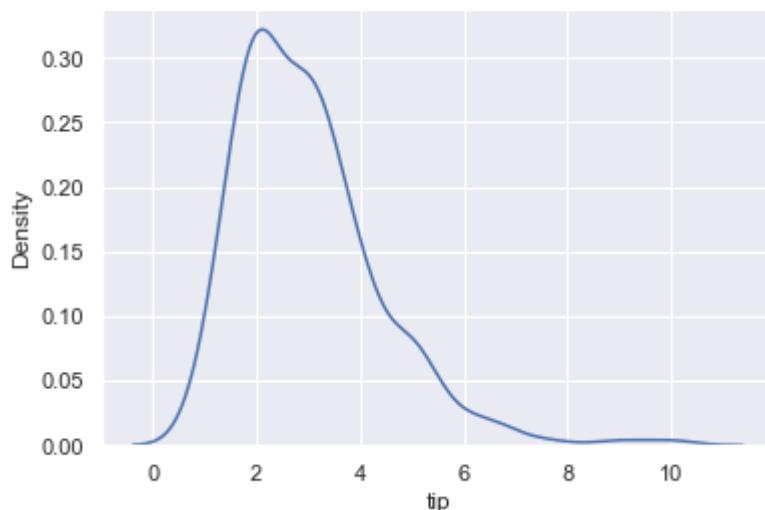
```
In [38]: sns.kdeplot(tips_df["total_bill"])
```

```
Out[38]: <AxesSubplot:xlabel='total_bill', ylabel='Density'>
```



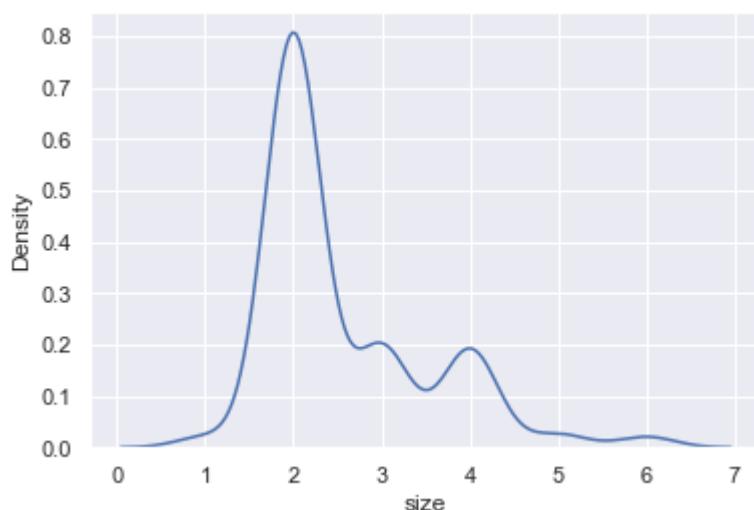
```
In [39]: sns.kdeplot(tips_df["tip"])
```

```
Out[39]: <AxesSubplot:xlabel='tip', ylabel='Density'>
```



```
In [40]: sns.kdeplot(tips_df["size"])
```

```
Out[40]: <AxesSubplot:xlabel='size', ylabel='Density'>
```



```
"""\n    sns.displot( sns.distplot( a=None, bins=None, hist=True, kde=True, rug=False, fit=None,\n    hist_kws=None, kde_kws=None, rug_kws=None, fit_kws=None, color=None, vertical=False,
```

```
norm_hist=False, xlabel=None, label=None, ax=None, x=None, ) """
```

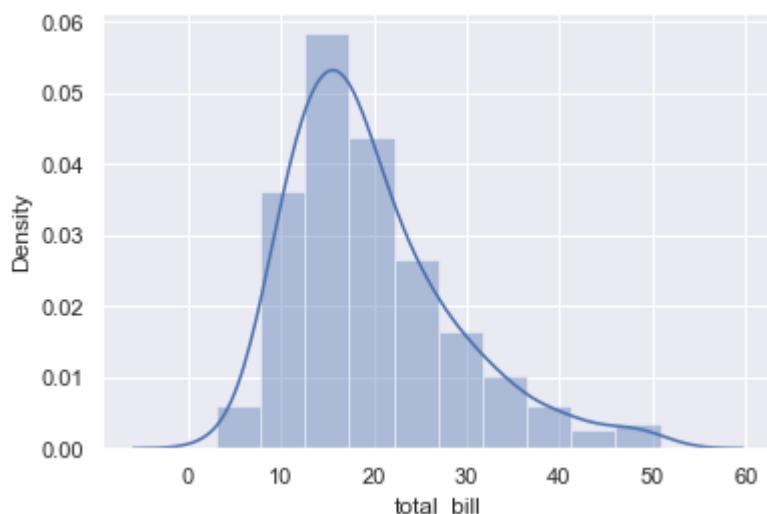
## Bins

In [41]:

```
sns.distplot(tips_df["total_bill"], bins=10)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[41]:

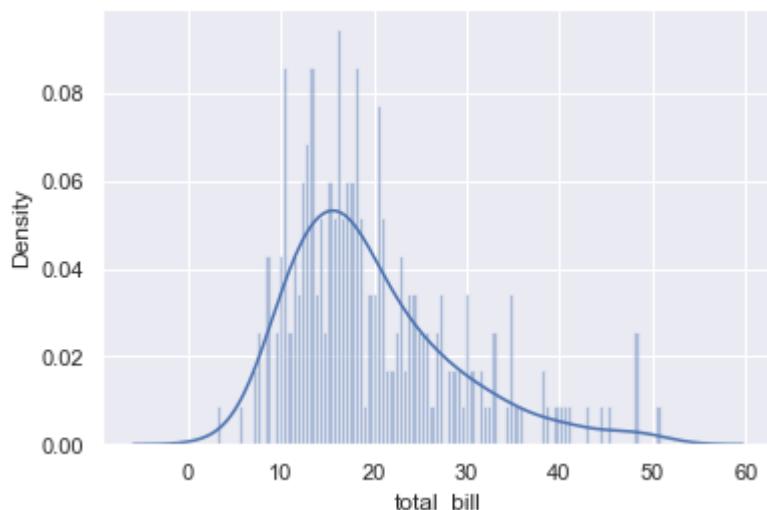


In [42]:

```
sns.distplot(tips_df["total_bill"], bins=100)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[42]:

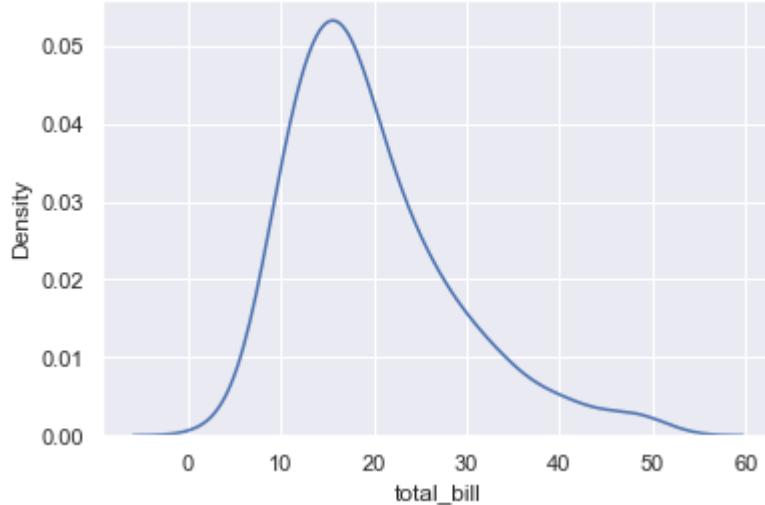


In [43]:

```
sns.distplot(tips_df["total_bill"], hist = False)

c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `kdeplot` (an axes-level
function for kernel density plots).
    warnings.warn(msg, FutureWarning)
<AxesSubplot:xlabel='total_bill', ylabel='Density'>
```

Out[43]:

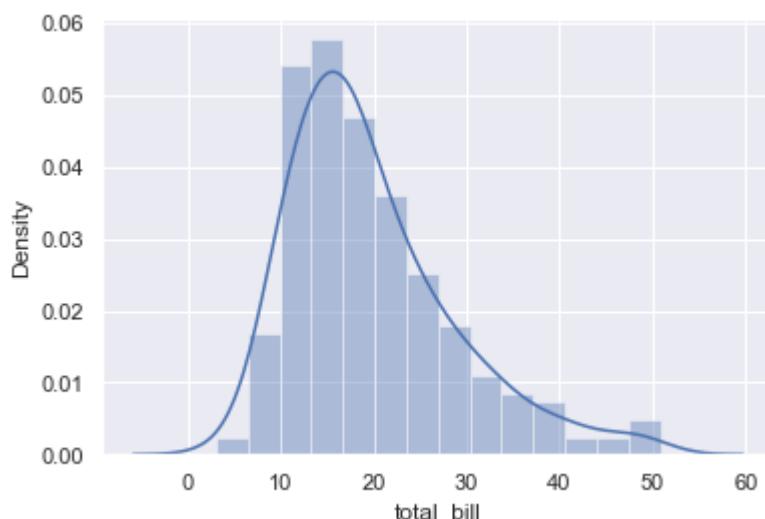


```
In [44]: import seaborn as sns
```

```
In [45]: sns.distplot(tips_df["total_bill"], hist = True)
```

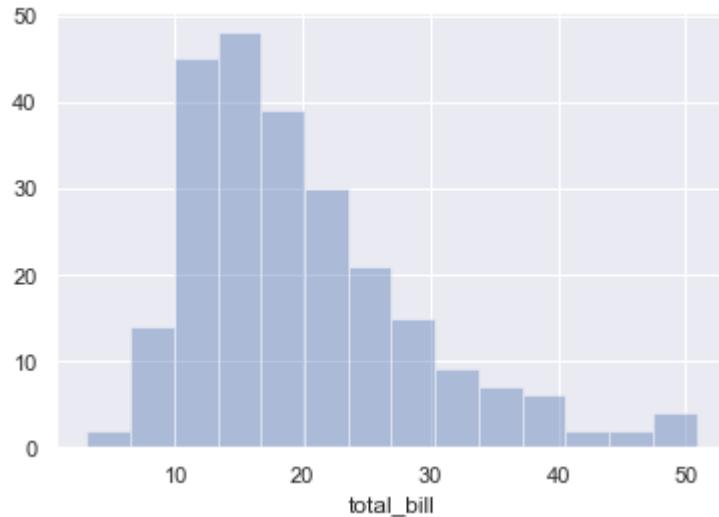
```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[45]:



```
In [46]: sns.distplot(tips_df["total_bill"], kde = False)
```

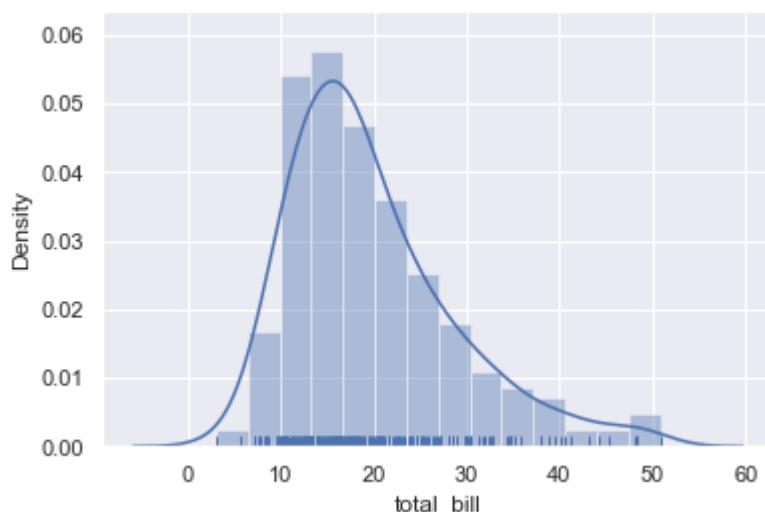
```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
Out[46]: <AxesSubplot:xlabel='total_bill'>
```



## rug :- rugplot

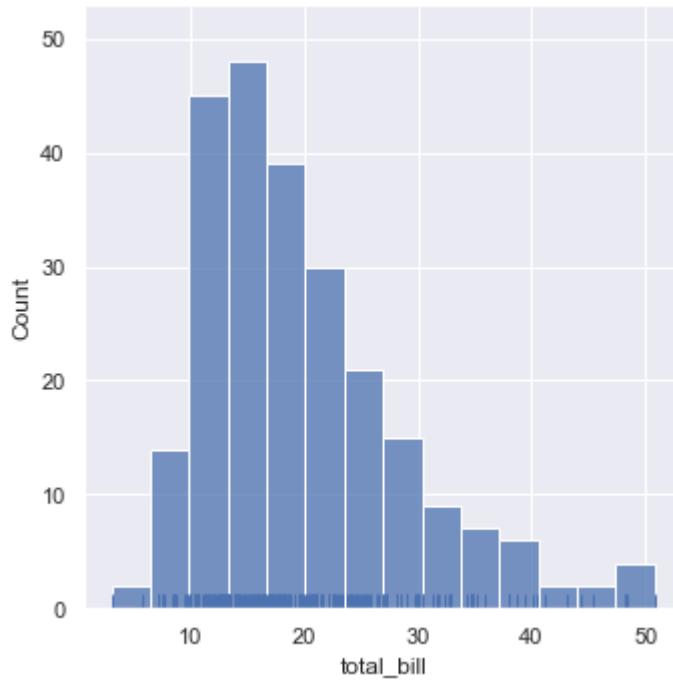
```
In [47]: sns.distplot(tips_df["total_bill"], rug=True)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:205
6: FutureWarning: The `axis` variable is no longer used and will be remov
ed. Instead, assign variables directly to `x` or `y`.
    warnings.warn(msg, FutureWarning)
Out[47]: <AxesSubplot:xlabel='total_bill', ylabel='Density'>
```



```
In [48]: sns.displot(tips_df["total_bill"], rug=True)
```

```
Out[48]: <seaborn.axisgrid.FacetGrid at 0x209469c1370>
```



In [49]:

```
import seaborn as sns
from scipy.stats import norm
```

**fit :-** An object with `fit` method, returning a tuple that can be passed to a `pdf` method a positional arguments following a grid of values to evaluate the pdf on.

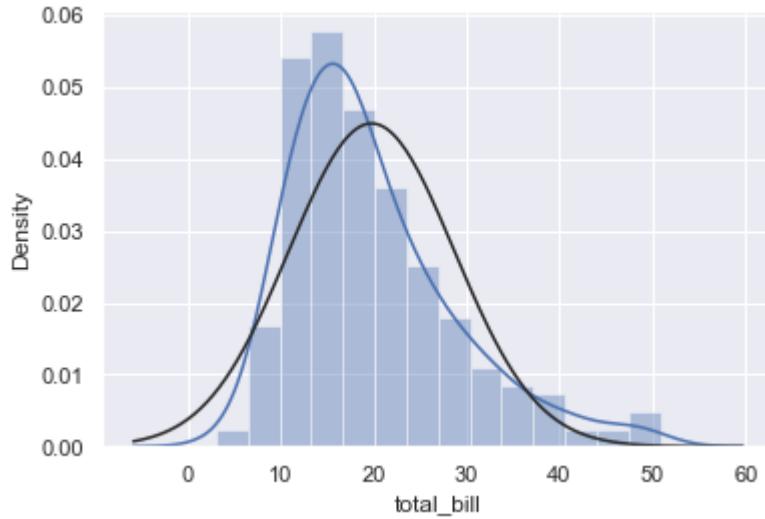
In [50]:

```
sns.distplot(tips_df["total_bill"], fit=norm)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[50]:

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

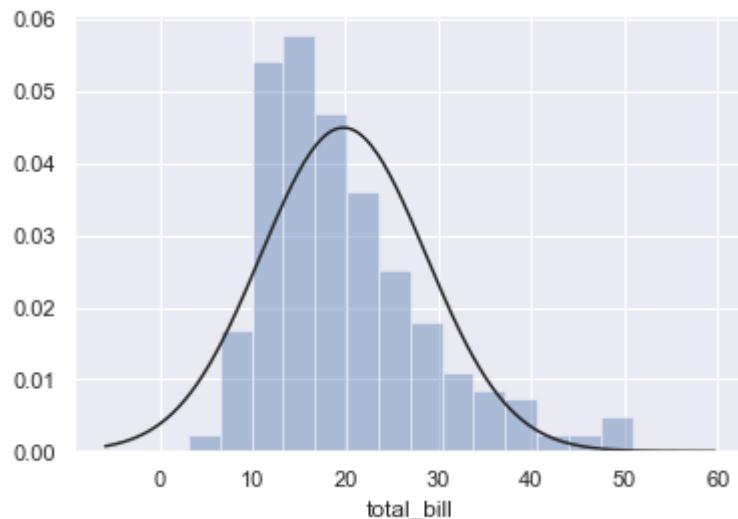


In [51]:

```
sns.distplot(tips_df["total_bill"], fit=norm, kde=False)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[51]:



## color="orange" to plot everything but the fitted curve in

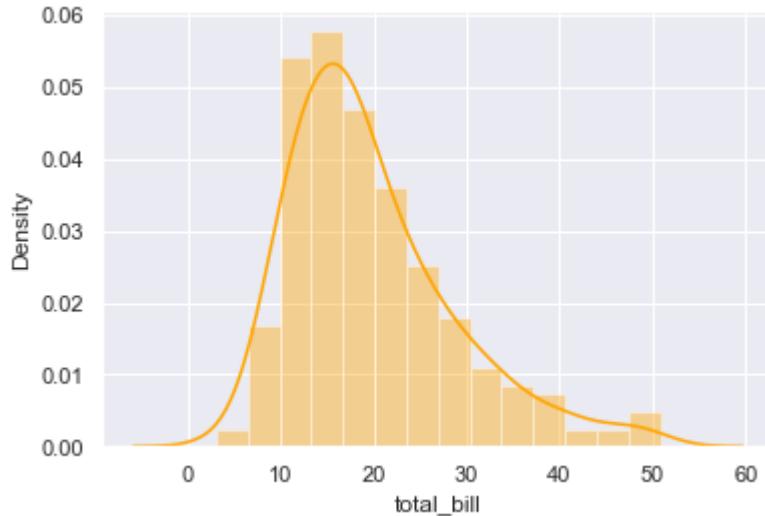
In [52]:

```
sns.distplot(tips_df["total_bill"], color="orange")
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[52]:

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



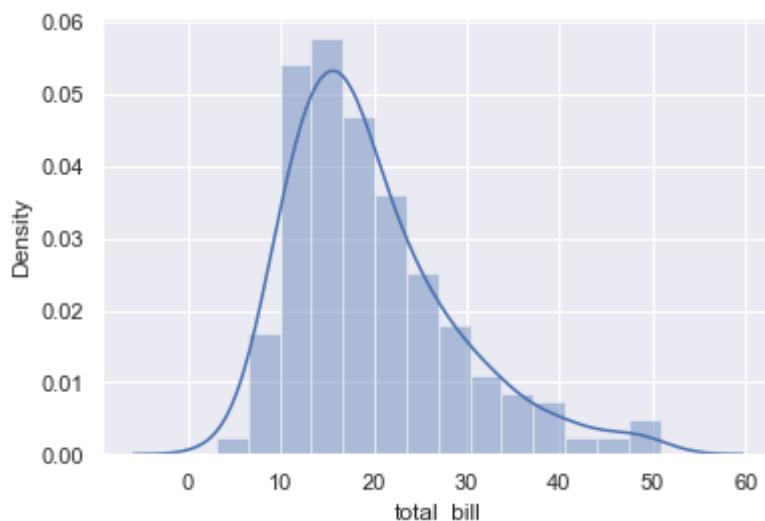
## Vertical:-If True, observed values are on y-axis

In [53]:

```
sns.distplot(tips_df["total_bill"], vertical=False)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[53]:

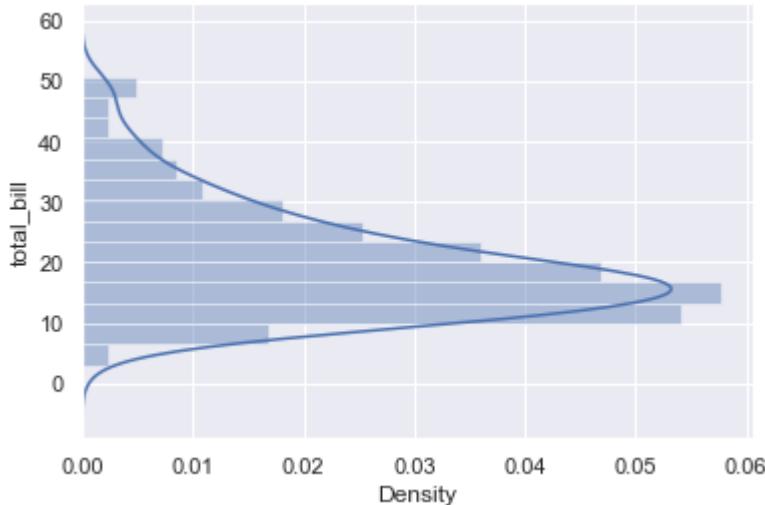


In [54]:

```
sns.distplot(tips_df["total_bill"], vertical=True)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:164
7: FutureWarning: The `vertical` parameter is deprecated and will be remo
```

```
ved in a future version. Assign the data to the `y` variable instead.  
warnings.warn(msg, FutureWarning)  
Out[54]: <AxesSubplot:xlabel='Density', ylabel='total_bill'>
```



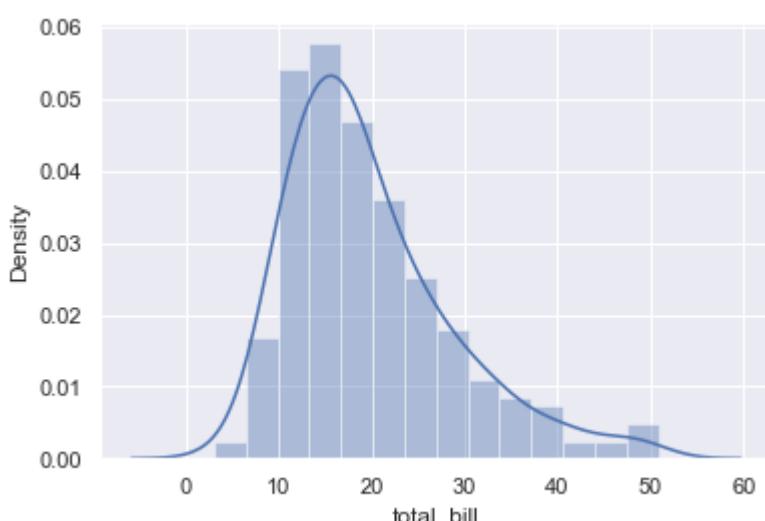
**norm\_hist:-** If True, the histogram height shows a density rather than a count. This is implied if a KDE or fitted density is plotted.

```
In [55]:  
import seaborn as sns  
from scipy.stats import norm
```

```
In [56]:  
sns.distplot(tips_df["total_bill"], norm_hist=True)
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255  
7: FutureWarning: `distplot` is a deprecated function and will be removed  
in a future version. Please adapt your code to use either `displot` (a fi-  
gure-level function with similar flexibility) or `histplot` (an axes-leve-  
l function for histograms).  
warnings.warn(msg, FutureWarning)
```

```
Out[56]: <AxesSubplot:xlabel='total_bill', ylabel='Density'>
```



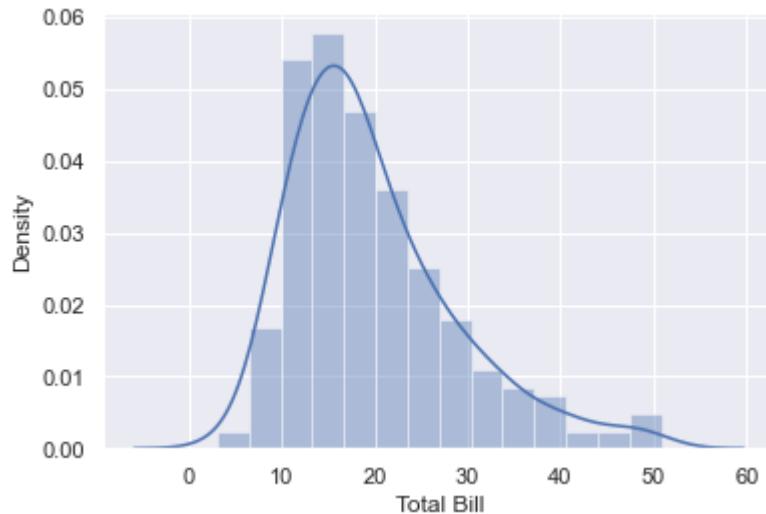
**axlabel:-**Name for the support axis label. If None, will try to get it from a.name if False, do not set a label

In [57]:

```
sns.distplot(tips_df["total_bill"], xlabel="Total Bill")
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[57]:



**label:-** Legend label for the relevant component of the plot

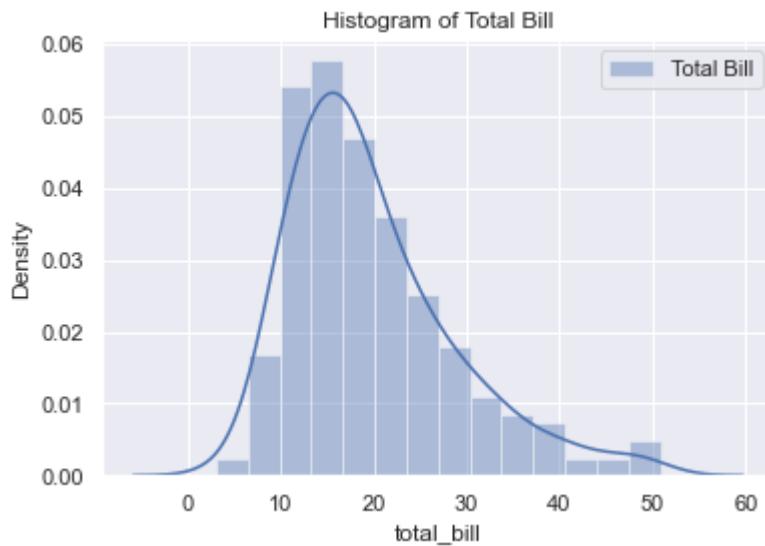
In [58]:

```
sns.distplot(tips_df["total_bill"], label="Total Bill")
plt.title("Histogram of Total Bill",)
plt.legend()
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[58]:

```
<matplotlib.legend.Legend at 0x2094a31beb0>
```

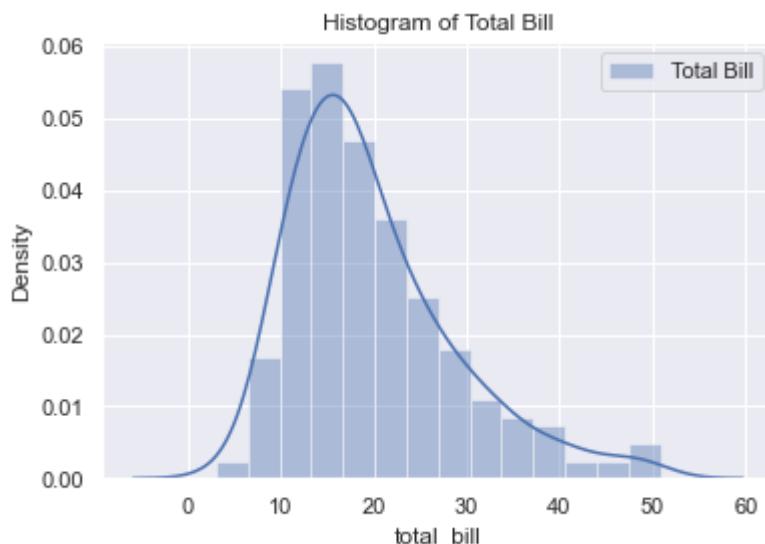


In [59]:

```
sns.set()
sns.distplot(tips_df["total_bill"], label="Total Bill")
plt.title("Histogram of Total Bill") #for histogram title
plt.legend() # for label
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[59]:



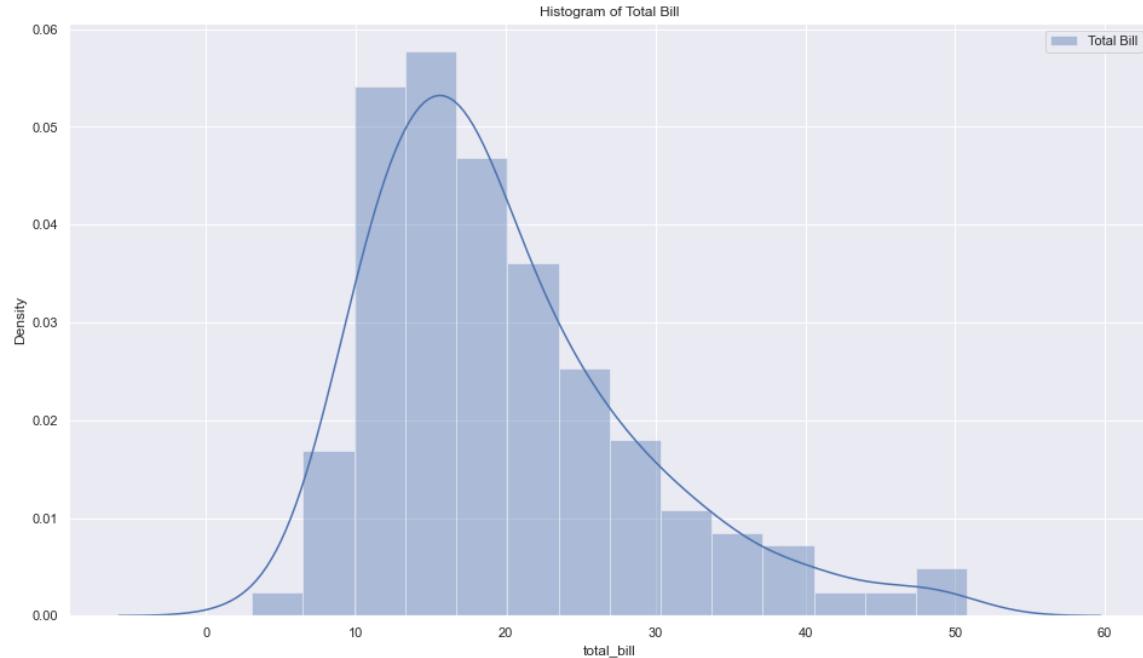
In [60]:

```
plt.figure(figsize=(16, 9)) # to show big graph
sns.set()
sns.distplot(tips_df["total_bill"], label="Total Bill")
plt.title("Histogram of Total Bill") #for histogram title
plt.legend() # for label
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
```

```
    1 function for histograms).
      warnings.warn(msg, FutureWarning)
<matplotlib.legend.Legend at 0x2094a3d0940>
```

Out[60]:



```
In [61]: tips_df.total_bill.sort_values()
```

```
Out[61]: 67      3.07
92      5.75
111     7.25
172     7.25
149     7.51
...
182     45.35
156     48.17
59      48.27
212     48.33
170     50.81
Name: total_bill, Length: 244, dtype: float64
```

```
In [62]: tips_df.total_bill.sort_values().head(60)
```

```
Out[62]: 67      3.07
92      5.75
111     7.25
172     7.25
149     7.51
195     7.56
218     7.74
145     8.35
135     8.51
126     8.52
222     8.58
6       8.77
30      9.55
178     9.60
43      9.68
148     9.78
53      9.94
235    10.07
82      10.07
```

```
226    10.09
10     10.27
51     10.29
16     10.33
136    10.33
1      10.34
196    10.34
75     10.51
168    10.59
169    10.63
117    10.65
233    10.77
62     11.02
132    11.17
58     11.24
100    11.35
128    11.38
217    11.59
232    11.61
120    11.69
147    11.87
70     12.02
97     12.03
220    12.16
133    12.26
118    12.43
99     12.46
124    12.48
50     12.54
236    12.60
161    12.66
27     12.69
201    12.74
209    12.76
215    12.90
198    13.00
202    13.00
86     13.03
151    13.13
139    13.16
213    13.27
Name: total_bill, dtype: float64
```

```
In [63]: pd.set_option('display.max_rows', 250)
```

```
In [64]: tips_df.total_bill.sort_values()
```

```
Out[64]: 67      3.07
92      5.75
111     7.25
172     7.25
149     7.51
195     7.56
218     7.74
145     8.35
135     8.51
126     8.52
222     8.58
6       8.77
30      9.55
178     9.60
43      9.68
```

148	9.78
53	9.94
235	10.07
82	10.07
226	10.09
10	10.27
51	10.29
16	10.33
136	10.33
1	10.34
196	10.34
75	10.51
168	10.59
169	10.63
117	10.65
233	10.77
62	11.02
132	11.17
58	11.24
100	11.35
128	11.38
217	11.59
232	11.61
120	11.69
147	11.87
70	12.02
97	12.03
220	12.16
133	12.26
118	12.43
99	12.46
124	12.48
50	12.54
236	12.60
161	12.66
27	12.69
201	12.74
209	12.76
215	12.90
198	13.00
202	13.00
86	13.03
151	13.13
139	13.16
213	13.27
228	13.28
26	13.37
158	13.39
121	13.42
224	13.42
221	13.42
199	13.51
163	13.81
61	13.81
42	13.94
110	14.00
150	14.07
137	14.15
122	14.26
109	14.31
177	14.48
127	14.52
74	14.73
9	14.78

14	14.83
69	15.01
8	15.04
32	15.06
105	15.36
101	15.38
12	15.42
193	15.48
234	15.53
231	15.69
190	15.69
22	15.77
171	15.81
123	15.95
223	15.98
84	15.98
138	16.00
40	16.04
162	16.21
225	16.27
17	16.29
36	16.31
93	16.32
203	16.40
144	16.43
66	16.45
205	16.47
159	16.49
194	16.58
81	16.66
174	16.82
37	16.93
18	16.97
0	16.99
71	17.07
152	17.26
79	17.29
115	17.31
41	17.46
140	17.47
164	17.51
64	17.59
34	17.78
25	17.81
242	17.82
176	17.89
20	17.92
76	17.92
49	18.04
188	18.15
108	18.24
134	18.26
87	18.28
45	18.29
63	18.29
31	18.35
13	18.43
146	18.64
38	18.69
200	18.71
243	18.78
130	19.08
80	19.44
55	19.49

29	19.65
154	19.77
191	19.81
24	19.82
65	20.08
68	20.23
131	20.27
21	20.29
60	20.29
227	20.45
106	20.49
204	20.53
19	20.65
185	20.69
33	20.69
166	20.76
186	20.90
104	20.92
2	21.01
98	21.01
89	21.16
160	21.50
15	21.58
28	21.70
229	22.12
46	22.23
103	22.42
91	22.49
241	22.67
94	22.75
78	22.76
129	22.82
189	23.10
183	23.17
181	23.33
3	23.68
113	23.95
230	24.01
35	24.06
119	24.08
208	24.27
165	24.52
153	24.55
4	24.59
88	24.71
157	25.00
107	25.21
73	25.28
5	25.29
54	25.56
114	25.71
211	25.89
57	26.41
206	26.59
72	26.86
7	26.88
143	27.05
240	27.18
77	27.20
96	27.28
216	28.15
214	28.17
192	28.44
48	28.55

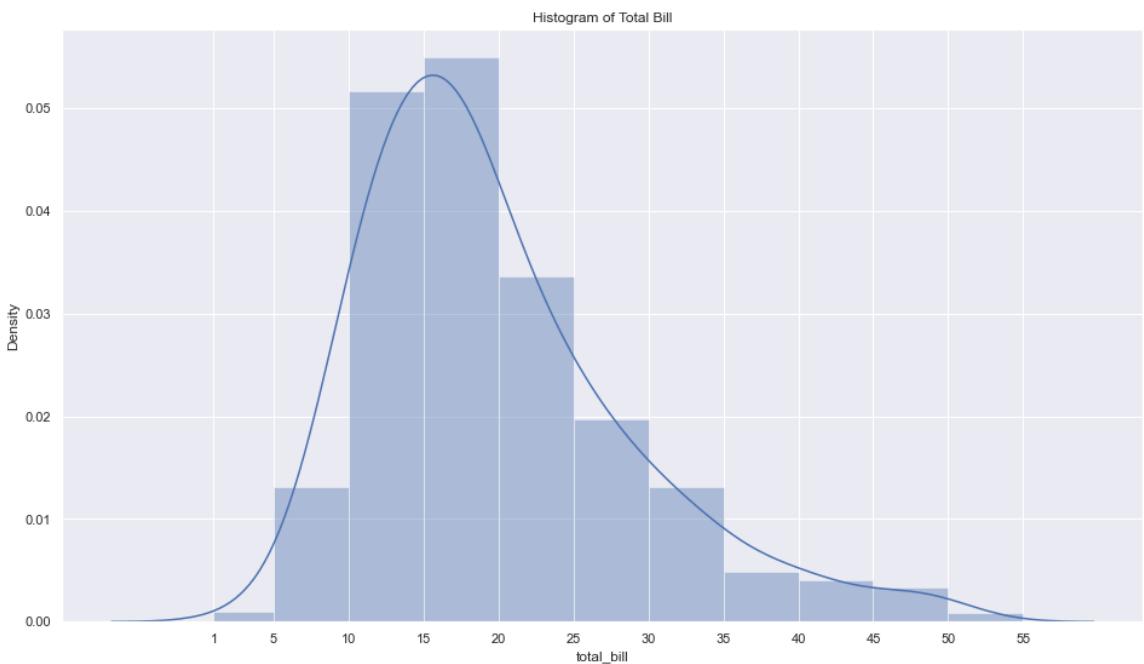
```
90      28.97
239     29.03
125     29.80
155     29.85
116     29.93
210     30.06
219     30.14
44      30.40
187     30.46
39      31.27
167     31.71
173     31.85
47      32.40
83      32.68
237     32.83
175     32.90
141     34.30
179     34.63
180     34.65
52      34.81
85      34.83
11      35.26
238     35.83
56      38.01
112     38.07
207     38.73
23      39.42
95      40.17
184     40.55
142     41.19
197     43.11
102     44.30
182     45.35
156     48.17
59      48.27
212     48.33
170     50.81
Name: total_bill, dtype: float64
```

```
In [65]: bins = [1,5,10,15,20,25,30,35,40,45,50,55]
```

```
plt.figure(figsize=(16,9)) # to show big graph
sns.set()
sns.distplot(tips_df["total_bill"],bins = bins)
plt.xticks(bins)
plt.title("Histogram of Total Bill") #for histogram title
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

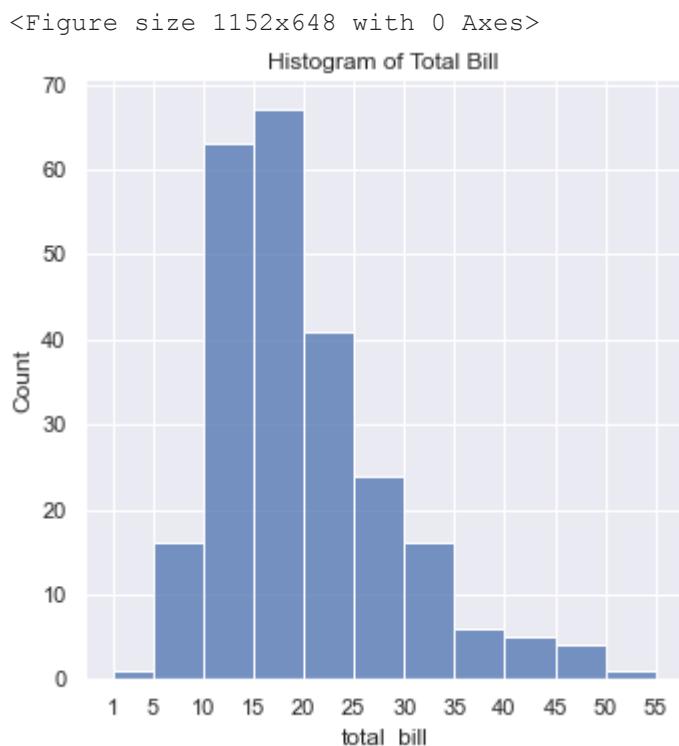
```
Out[65]: Text(0.5, 1.0, 'Histogram of Total Bill')
```



```
In [66]: bins = [1,5,10,15,20,25,30,35,40,45,50,55]
```

```
plt.figure(figsize=(16,9)) # to show big graph
sns.set()
sns.displot(tips_df["total_bill"],bins = bins)
plt.xticks(bins)
plt.title("Histogram of Total Bill") #for histogram title
```

```
Out[66]: Text(0.5, 1.0, 'Histogram of Total Bill')
```

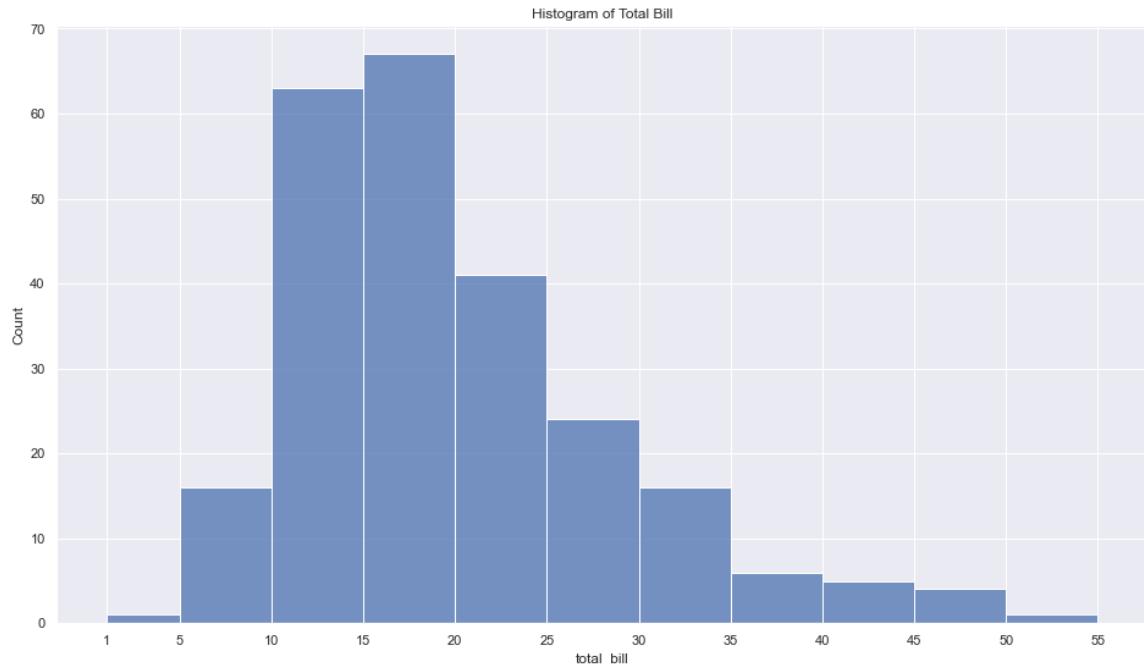


```
In [67]: bins = [1,5,10,15,20,25,30,35,40,45,50,55]
```

```
plt.figure(figsize=(16,9)) # to show big graph
sns.set()
sns.histplot(tips_df["total_bill"],bins = bins)
```

```
plt.xticks(bins)
plt.title("Histogram of Total Bill") #for histogram title
```

Out[67]: Text(0.5, 1.0, 'Histogram of Total Bill')

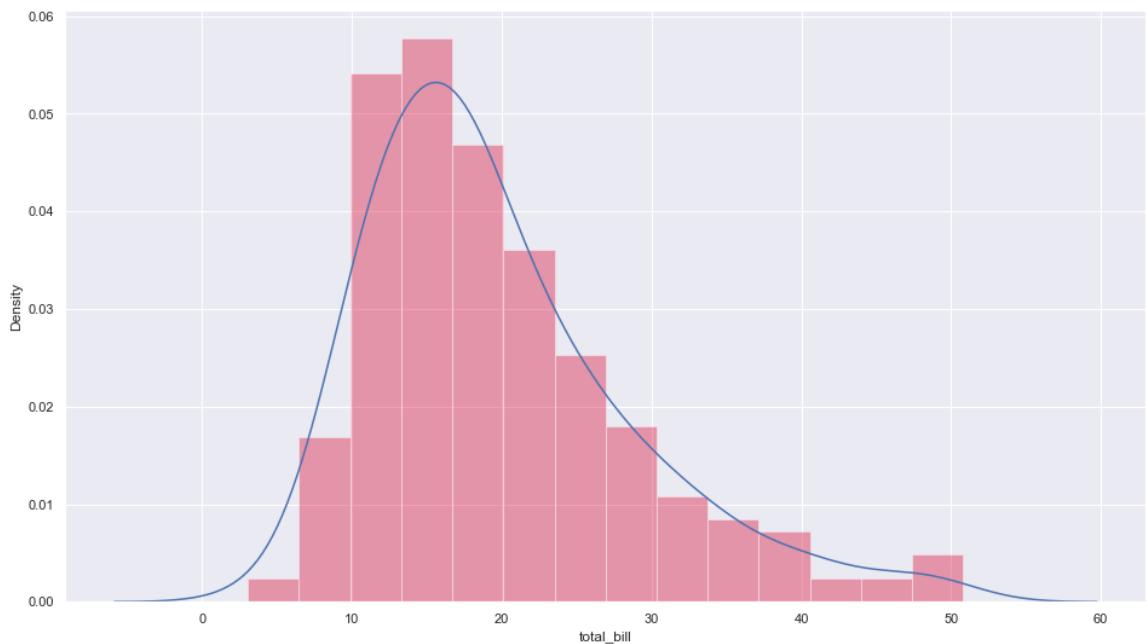


## hist\_kws:- color

```
In [68]: plt.figure(figsize=(16, 9))
sns.set()
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C'})
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[68]: <AxesSubplot:xlabel='total\_bill', ylabel='Density'>



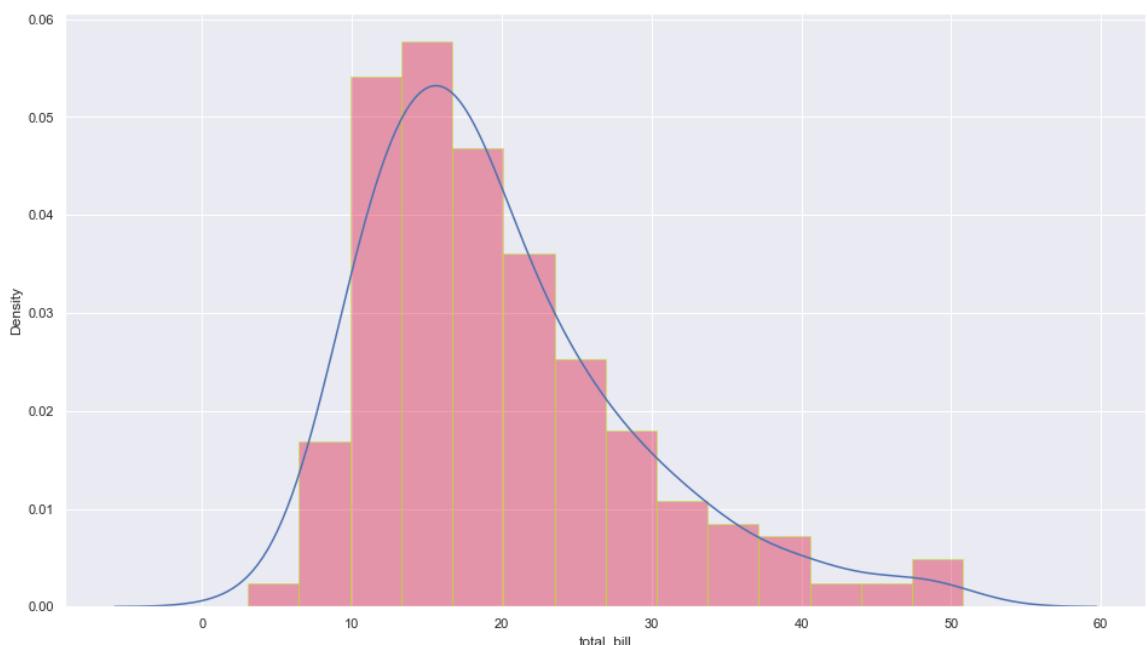
## hist\_kws:- edgecolor

In [69]:

```
plt.figure(figsize=(16, 9))
sns.set()
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00'})
```

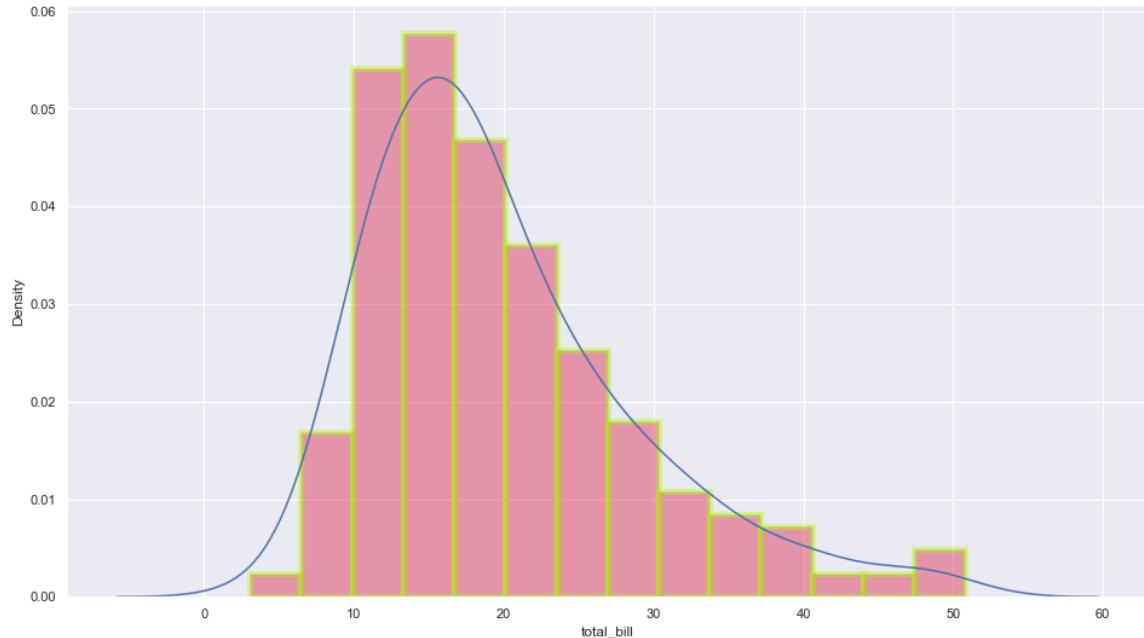
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255  
7: FutureWarning: `distplot` is a deprecated function and will be removed  
in a future version. Please adapt your code to use either `displot` (a  
figure-level function with similar flexibility) or `histplot` (an axes-leve  
l function for histograms).  
warnings.warn(msg, FutureWarning)

Out[69]:



## hist\_kws:- linewidth

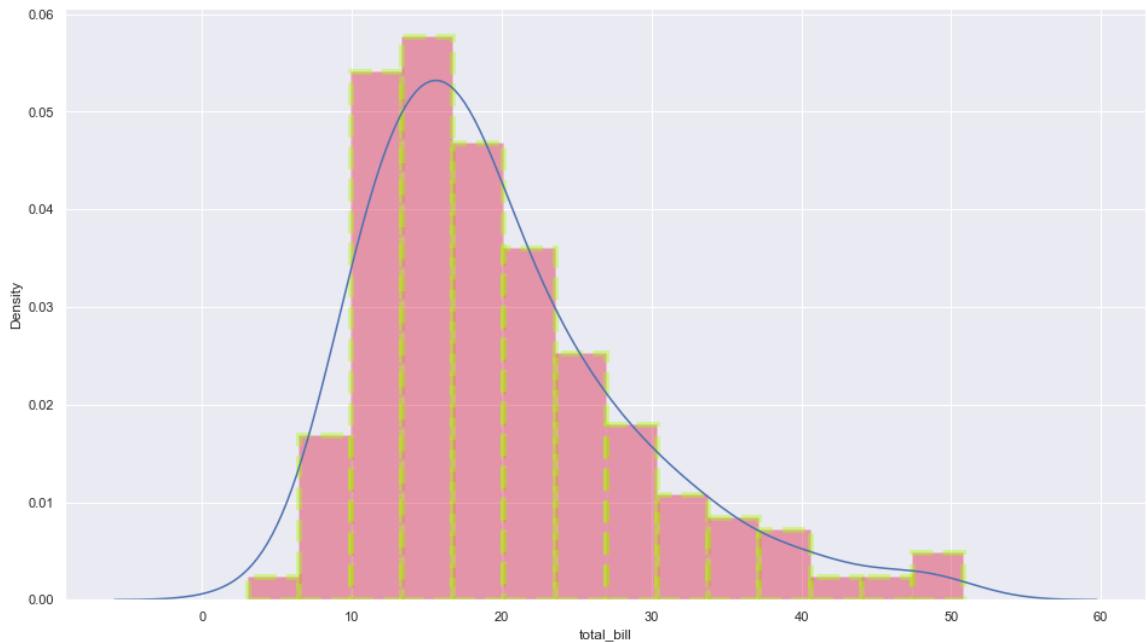
```
In [70]: plt.figure(figsize=(16,9))
sns.set()
sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00','linew
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
warnings.warn(msg, FutureWarning)
Out[70]: <AxesSubplot:xlabel='total_bill', ylabel='Density'>
```



## hist\_kws:- linestyle

```
In [71]: plt.figure(figsize=(16,9))
sns.set()

sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00','linew
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
warnings.warn(msg, FutureWarning)
Out[71]: <AxesSubplot:xlabel='total_bill', ylabel='Density'>
```



## hist\_kws:- alpha

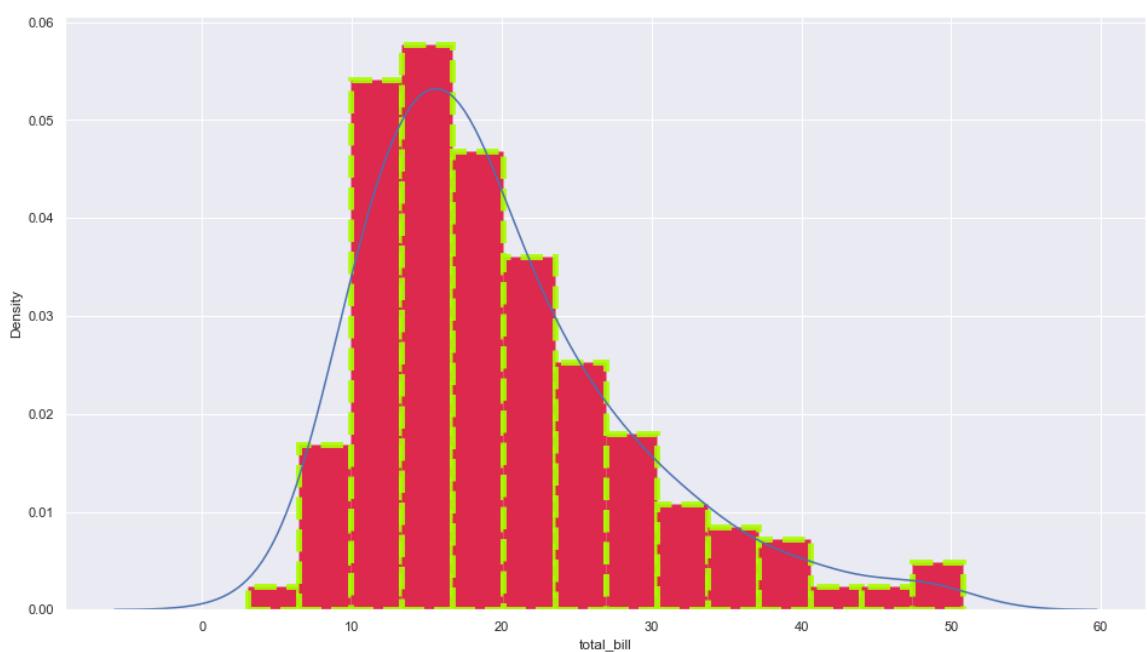
In [72]:

```
plt.figure(figsize=(16, 9))
sns.set()

sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00','linewidth':1})
```

c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255  
7: 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-leve  
l function for histograms).  
warnings.warn(msg, FutureWarning)

Out[72]:



## hist\_kws () , kde\_kws()

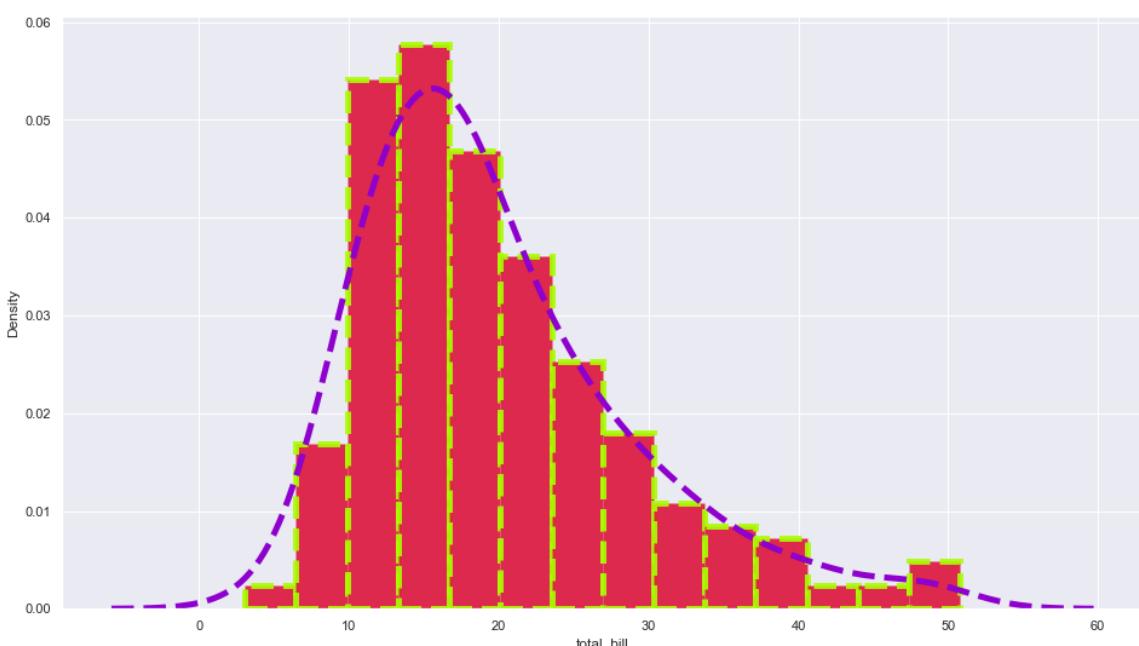
In [73]:

```
plt.figure(figsize=(16,9))
sns.set()

sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00','linewidth':1},
             kde_kws = {'color':'#8e00ce','linewidth':5,'linestyle': '--'}
```

c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255  
7: FutureWarning: `distplot` is a deprecated function and will be removed  
in a future version. Please adapt your code to use either `displot` (a fi-  
gure-level function with similar flexibility) or `histplot` (an axes-leve-  
l function for histograms).  
warnings.warn(msg, FutureWarning)

Out[73]:



## rug()

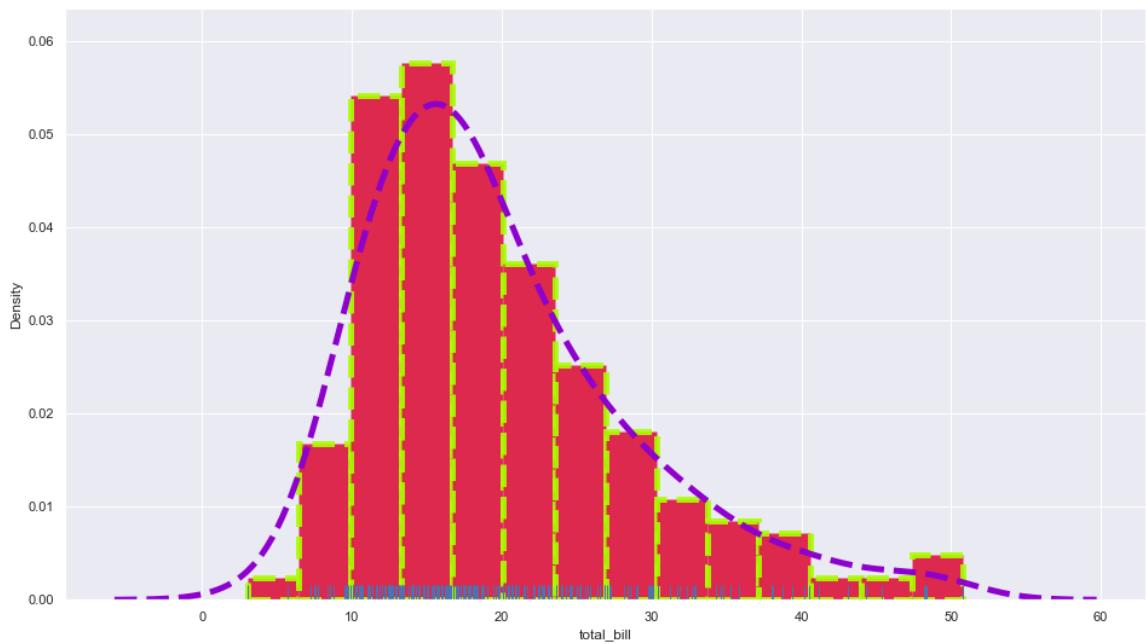
In [74]:

```
plt.figure(figsize=(16,9))
sns.set()

sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00','linewidth':1},
             kde_kws = {'color':'#8e00ce','linewidth':5,'linestyle': '--'},
             rug = True)
```

c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255  
7: FutureWarning: `distplot` is a deprecated function and will be removed  
in a future version. Please adapt your code to use either `displot` (a fi-  
gure-level function with similar flexibility) or `histplot` (an axes-leve-  
l function for histograms).  
warnings.warn(msg, FutureWarning)  
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:205  
6: FutureWarning: The `axis` variable is no longer used and will be remov-  
ed. Instead, assign variables directly to `x` or `y`.  
warnings.warn(msg, FutureWarning)

```
Out[74]: <AxesSubplot:xlabel='total_bill', ylabel='Density'>
```



## fit()

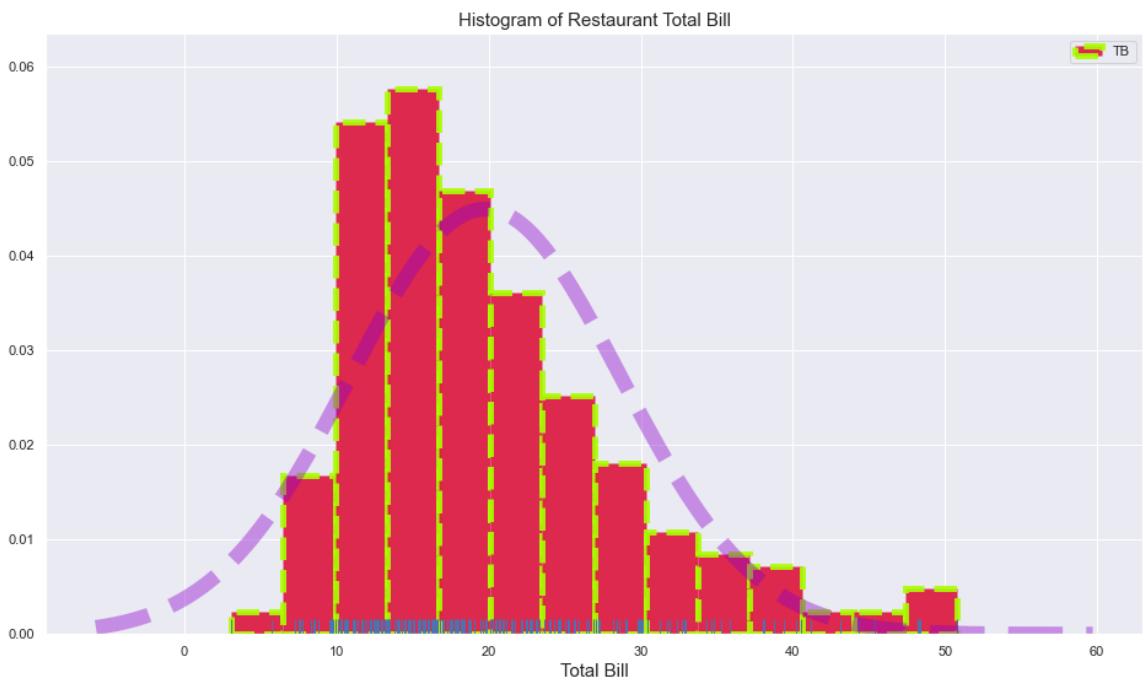
```
In [75]:
```

```
plt.figure(figsize=(16,9))
sns.set()

sns.distplot(tips_df["total_bill"],
             hist_kws = {'color':'#DC143C', 'edgecolor':'#aaff00','linewidth':2},
             kde=False,
             fit = norm,
             fit_kws = {'color':'#8e00ce','linewidth':12,'linestyle': '--',
                        'kde_kws = {'color':'#8e00ce',
                                    'linewidth':5,'linestyle': '--','alpha':0.4},
             rug = True,
             label = "TB")

plt.title("Histogram of Restaurant Total Bill", fontsize = 15)
plt.xlabel("Total Bill", fontsize = 15)
plt.legend()
plt.show()
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:205
6: FutureWarning: The `axis` variable is no longer used and will be remov
ed. Instead, assign variables directly to `x` or `y`.
    warnings.warn(msg, FutureWarning)
```



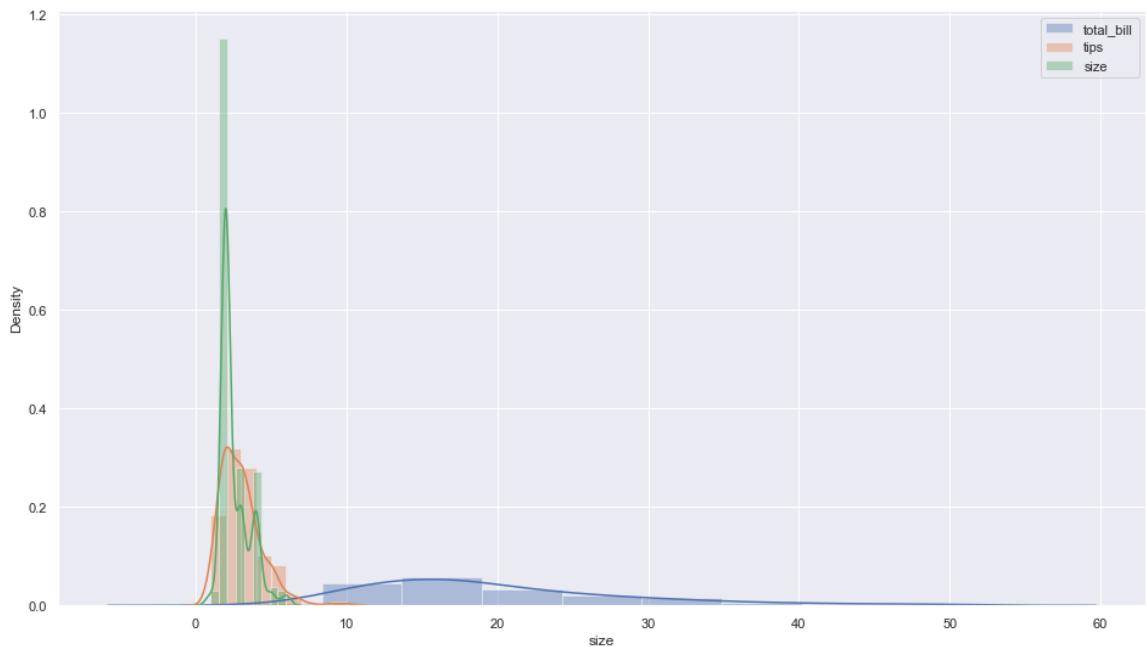
In [76]:

```
plt.figure(figsize=(16,9))
sns.distplot(tips_df["total_bill"], bins=9, label="total_bill")
sns.distplot(tips_df["tip"], bins=9, label="tips")
sns.distplot(tips_df["size"], bins=9, label="size")
plt.legend()
```

```
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
c:\users\nemade\python 37\lib\site-packages\seaborn\distributions.py:255
7: FutureWarning: `distplot` is a deprecated function and will be removed
in a future version. Please adapt your code to use either `displot` (a fi
gure-level function with similar flexibility) or `histplot` (an axes-leve
l function for histograms).
    warnings.warn(msg, FutureWarning)
```

Out[76]:

```
<matplotlib.legend.Legend at 0x2094bb0a6a0>
```

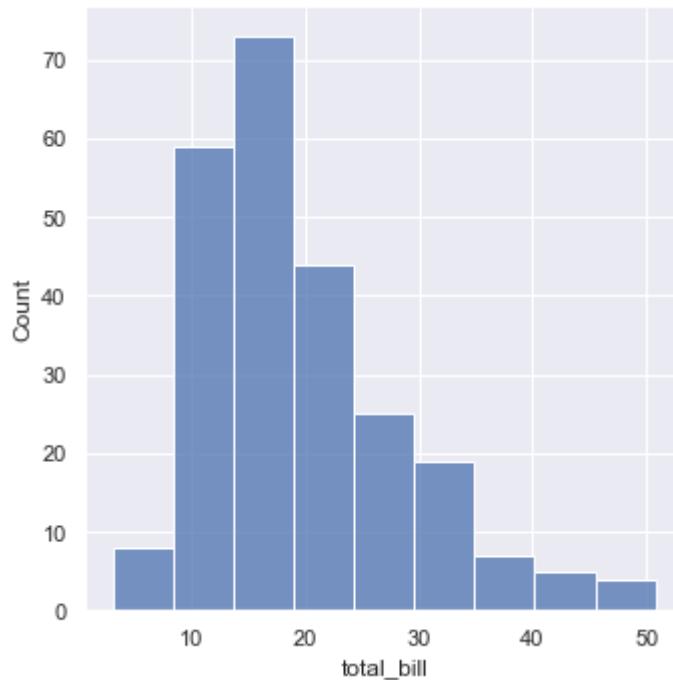


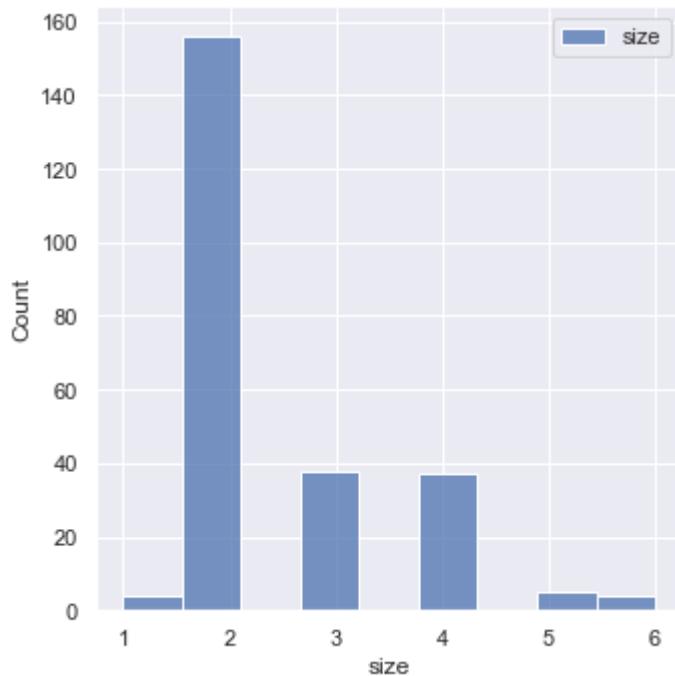
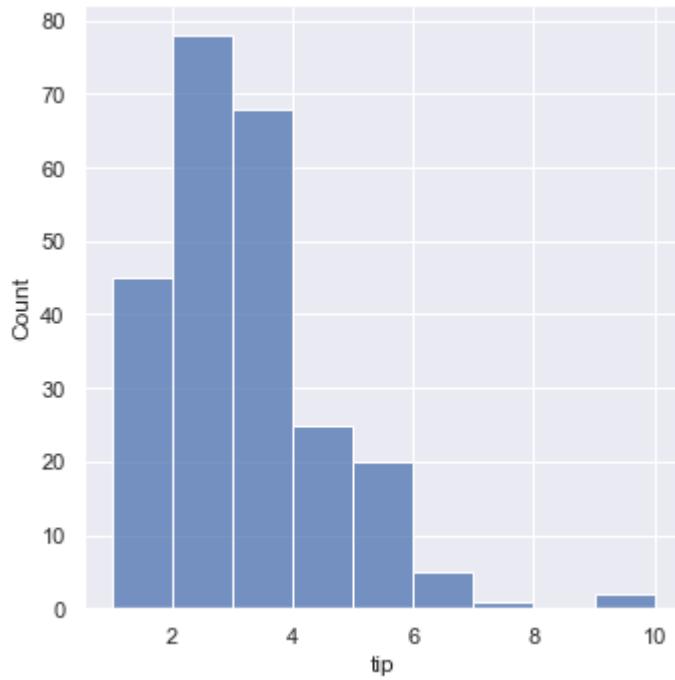
In [77]:

```
plt.figure(figsize=(16, 9))
sns.distplot(tips_df["total_bill"], bins=9, label="total_bill")
sns.distplot(tips_df["tip"], bins=9, label="tips")
sns.distplot(tips_df["size"], bins=9, label="size")
plt.legend()
```

Out[77]:

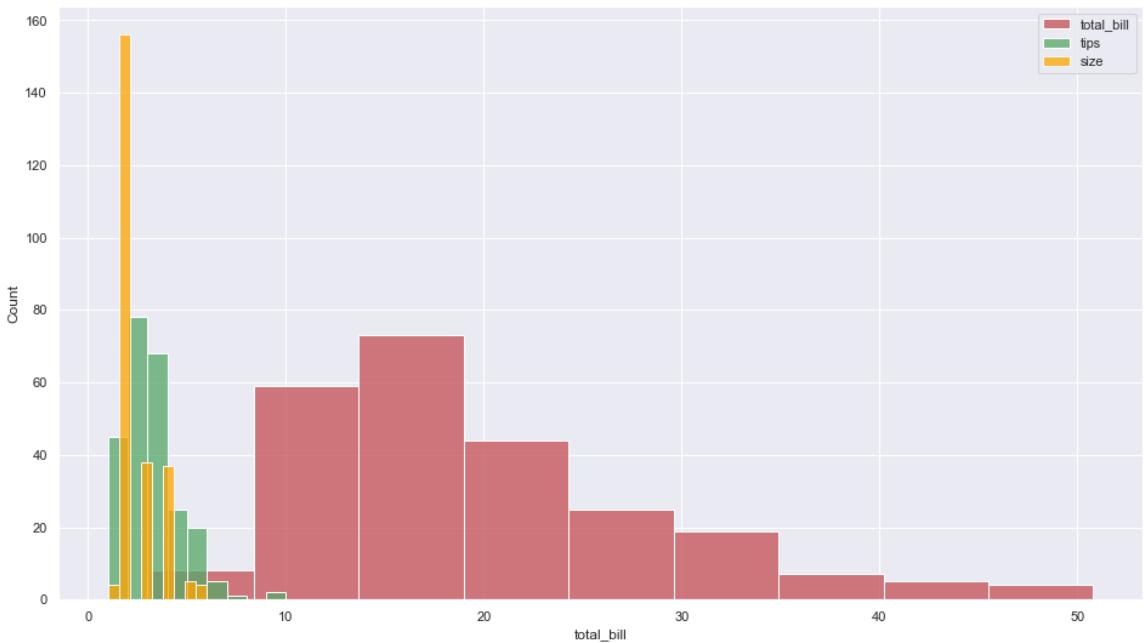
```
<matplotlib.legend.Legend at 0x2094ba58760>
<Figure size 1152x648 with 0 Axes>
```





```
In [78]: plt.figure(figsize=(16, 9))
sns.histplot(tips_df["total_bill"], bins=9, label="total_bill", color="r")
sns.histplot(tips_df["tip"], bins=9, label="tips", color="g")
sns.histplot(tips_df["size"], bins=9, label="size", color="orange")
plt.legend()
```

```
Out[78]: <matplotlib.legend.Legend at 0x2094bfa8e50>
```



## How to Draw Seaborn Barplot/Bar Graph

In [79]:

```
import seaborn as sns
import numpy as np
import matplotlib.pyplot as plt
```

In [80]:

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

Out[80]:

	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
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4
8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2
10	10.27	1.71	Male	No	Sun	Dinner	2
11	35.26	5.00	Female	No	Sun	Dinner	4
12	15.42	1.57	Male	No	Sun	Dinner	2
13	18.43	3.00	Male	No	Sun	Dinner	4
14	14.83	3.02	Female	No	Sun	Dinner	2
15	21.58	3.92	Male	No	Sun	Dinner	2
16	10.33	1.67	Female	No	Sun	Dinner	3

17	16.29	3.71	Male	No	Sun	Dinner	3
18	16.97	3.50	Female	No	Sun	Dinner	3
19	20.65	3.35	Male	No	Sat	Dinner	3
20	17.92	4.08	Male	No	Sat	Dinner	2
21	20.29	2.75	Female	No	Sat	Dinner	2
22	15.77	2.23	Female	No	Sat	Dinner	2
23	39.42	7.58	Male	No	Sat	Dinner	4
24	19.82	3.18	Male	No	Sat	Dinner	2
25	17.81	2.34	Male	No	Sat	Dinner	4
26	13.37	2.00	Male	No	Sat	Dinner	2
27	12.69	2.00	Male	No	Sat	Dinner	2
28	21.70	4.30	Male	No	Sat	Dinner	2
29	19.65	3.00	Female	No	Sat	Dinner	2
30	9.55	1.45	Male	No	Sat	Dinner	2
31	18.35	2.50	Male	No	Sat	Dinner	4
32	15.06	3.00	Female	No	Sat	Dinner	2
33	20.69	2.45	Female	No	Sat	Dinner	4
34	17.78	3.27	Male	No	Sat	Dinner	2
35	24.06	3.60	Male	No	Sat	Dinner	3
36	16.31	2.00	Male	No	Sat	Dinner	3
37	16.93	3.07	Female	No	Sat	Dinner	3
38	18.69	2.31	Male	No	Sat	Dinner	3
39	31.27	5.00	Male	No	Sat	Dinner	3
40	16.04	2.24	Male	No	Sat	Dinner	3
41	17.46	2.54	Male	No	Sun	Dinner	2
42	13.94	3.06	Male	No	Sun	Dinner	2
43	9.68	1.32	Male	No	Sun	Dinner	2
44	30.40	5.60	Male	No	Sun	Dinner	4
45	18.29	3.00	Male	No	Sun	Dinner	2
46	22.23	5.00	Male	No	Sun	Dinner	2
47	32.40	6.00	Male	No	Sun	Dinner	4
48	28.55	2.05	Male	No	Sun	Dinner	3
49	18.04	3.00	Male	No	Sun	Dinner	2
50	12.54	2.50	Male	No	Sun	Dinner	2
51	10.29	2.60	Female	No	Sun	Dinner	2
52	34.81	5.20	Female	No	Sun	Dinner	4
53	9.94	1.56	Male	No	Sun	Dinner	2
54	25.56	4.34	Male	No	Sun	Dinner	4
55	19.49	3.51	Male	No	Sun	Dinner	2

56	38.01	3.00	Male	Yes	Sat	Dinner	4
57	26.41	1.50	Female	No	Sat	Dinner	2
58	11.24	1.76	Male	Yes	Sat	Dinner	2
59	48.27	6.73	Male	No	Sat	Dinner	4
60	20.29	3.21	Male	Yes	Sat	Dinner	2
61	13.81	2.00	Male	Yes	Sat	Dinner	2
62	11.02	1.98	Male	Yes	Sat	Dinner	2
63	18.29	3.76	Male	Yes	Sat	Dinner	4
64	17.59	2.64	Male	No	Sat	Dinner	3
65	20.08	3.15	Male	No	Sat	Dinner	3
66	16.45	2.47	Female	No	Sat	Dinner	2
67	3.07	1.00	Female	Yes	Sat	Dinner	1
68	20.23	2.01	Male	No	Sat	Dinner	2
69	15.01	2.09	Male	Yes	Sat	Dinner	2
70	12.02	1.97	Male	No	Sat	Dinner	2
71	17.07	3.00	Female	No	Sat	Dinner	3
72	26.86	3.14	Female	Yes	Sat	Dinner	2
73	25.28	5.00	Female	Yes	Sat	Dinner	2
74	14.73	2.20	Female	No	Sat	Dinner	2
75	10.51	1.25	Male	No	Sat	Dinner	2
76	17.92	3.08	Male	Yes	Sat	Dinner	2
77	27.20	4.00	Male	No	Thur	Lunch	4
78	22.76	3.00	Male	No	Thur	Lunch	2
79	17.29	2.71	Male	No	Thur	Lunch	2
80	19.44	3.00	Male	Yes	Thur	Lunch	2
81	16.66	3.40	Male	No	Thur	Lunch	2
82	10.07	1.83	Female	No	Thur	Lunch	1
83	32.68	5.00	Male	Yes	Thur	Lunch	2
84	15.98	2.03	Male	No	Thur	Lunch	2
85	34.83	5.17	Female	No	Thur	Lunch	4
86	13.03	2.00	Male	No	Thur	Lunch	2
87	18.28	4.00	Male	No	Thur	Lunch	2
88	24.71	5.85	Male	No	Thur	Lunch	2
89	21.16	3.00	Male	No	Thur	Lunch	2
90	28.97	3.00	Male	Yes	Fri	Dinner	2
91	22.49	3.50	Male	No	Fri	Dinner	2
92	5.75	1.00	Female	Yes	Fri	Dinner	2
93	16.32	4.30	Female	Yes	Fri	Dinner	2
94	22.75	3.25	Female	No	Fri	Dinner	2

95	40.17	4.73	Male	Yes	Fri	Dinner	4
96	27.28	4.00	Male	Yes	Fri	Dinner	2
97	12.03	1.50	Male	Yes	Fri	Dinner	2
98	21.01	3.00	Male	Yes	Fri	Dinner	2
99	12.46	1.50	Male	No	Fri	Dinner	2
100	11.35	2.50	Female	Yes	Fri	Dinner	2
101	15.38	3.00	Female	Yes	Fri	Dinner	2
102	44.30	2.50	Female	Yes	Sat	Dinner	3
103	22.42	3.48	Female	Yes	Sat	Dinner	2
104	20.92	4.08	Female	No	Sat	Dinner	2
105	15.36	1.64	Male	Yes	Sat	Dinner	2
106	20.49	4.06	Male	Yes	Sat	Dinner	2
107	25.21	4.29	Male	Yes	Sat	Dinner	2
108	18.24	3.76	Male	No	Sat	Dinner	2
109	14.31	4.00	Female	Yes	Sat	Dinner	2
110	14.00	3.00	Male	No	Sat	Dinner	2
111	7.25	1.00	Female	No	Sat	Dinner	1
112	38.07	4.00	Male	No	Sun	Dinner	3
113	23.95	2.55	Male	No	Sun	Dinner	2
114	25.71	4.00	Female	No	Sun	Dinner	3
115	17.31	3.50	Female	No	Sun	Dinner	2
116	29.93	5.07	Male	No	Sun	Dinner	4
117	10.65	1.50	Female	No	Thur	Lunch	2
118	12.43	1.80	Female	No	Thur	Lunch	2
119	24.08	2.92	Female	No	Thur	Lunch	4
120	11.69	2.31	Male	No	Thur	Lunch	2
121	13.42	1.68	Female	No	Thur	Lunch	2
122	14.26	2.50	Male	No	Thur	Lunch	2
123	15.95	2.00	Male	No	Thur	Lunch	2
124	12.48	2.52	Female	No	Thur	Lunch	2
125	29.80	4.20	Female	No	Thur	Lunch	6
126	8.52	1.48	Male	No	Thur	Lunch	2
127	14.52	2.00	Female	No	Thur	Lunch	2
128	11.38	2.00	Female	No	Thur	Lunch	2
129	22.82	2.18	Male	No	Thur	Lunch	3
130	19.08	1.50	Male	No	Thur	Lunch	2
131	20.27	2.83	Female	No	Thur	Lunch	2
132	11.17	1.50	Female	No	Thur	Lunch	2
133	12.26	2.00	Female	No	Thur	Lunch	2

134	18.26	3.25	Female	No	Thur	Lunch	2
135	8.51	1.25	Female	No	Thur	Lunch	2
136	10.33	2.00	Female	No	Thur	Lunch	2
137	14.15	2.00	Female	No	Thur	Lunch	2
138	16.00	2.00	Male	Yes	Thur	Lunch	2
139	13.16	2.75	Female	No	Thur	Lunch	2
140	17.47	3.50	Female	No	Thur	Lunch	2
141	34.30	6.70	Male	No	Thur	Lunch	6
142	41.19	5.00	Male	No	Thur	Lunch	5
143	27.05	5.00	Female	No	Thur	Lunch	6
144	16.43	2.30	Female	No	Thur	Lunch	2
145	8.35	1.50	Female	No	Thur	Lunch	2
146	18.64	1.36	Female	No	Thur	Lunch	3
147	11.87	1.63	Female	No	Thur	Lunch	2
148	9.78	1.73	Male	No	Thur	Lunch	2
149	7.51	2.00	Male	No	Thur	Lunch	2
150	14.07	2.50	Male	No	Sun	Dinner	2
151	13.13	2.00	Male	No	Sun	Dinner	2
152	17.26	2.74	Male	No	Sun	Dinner	3
153	24.55	2.00	Male	No	Sun	Dinner	4
154	19.77	2.00	Male	No	Sun	Dinner	4
155	29.85	5.14	Female	No	Sun	Dinner	5
156	48.17	5.00	Male	No	Sun	Dinner	6
157	25.00	3.75	Female	No	Sun	Dinner	4
158	13.39	2.61	Female	No	Sun	Dinner	2
159	16.49	2.00	Male	No	Sun	Dinner	4
160	21.50	3.50	Male	No	Sun	Dinner	4
161	12.66	2.50	Male	No	Sun	Dinner	2
162	16.21	2.00	Female	No	Sun	Dinner	3
163	13.81	2.00	Male	No	Sun	Dinner	2
164	17.51	3.00	Female	Yes	Sun	Dinner	2
165	24.52	3.48	Male	No	Sun	Dinner	3
166	20.76	2.24	Male	No	Sun	Dinner	2
167	31.71	4.50	Male	No	Sun	Dinner	4
168	10.59	1.61	Female	Yes	Sat	Dinner	2
169	10.63	2.00	Female	Yes	Sat	Dinner	2
170	50.81	10.00	Male	Yes	Sat	Dinner	3
171	15.81	3.16	Male	Yes	Sat	Dinner	2
172	7.25	5.15	Male	Yes	Sun	Dinner	2

173	31.85	3.18	Male	Yes	Sun	Dinner	2
174	16.82	4.00	Male	Yes	Sun	Dinner	2
175	32.90	3.11	Male	Yes	Sun	Dinner	2
176	17.89	2.00	Male	Yes	Sun	Dinner	2
177	14.48	2.00	Male	Yes	Sun	Dinner	2
178	9.60	4.00	Female	Yes	Sun	Dinner	2
179	34.63	3.55	Male	Yes	Sun	Dinner	2
180	34.65	3.68	Male	Yes	Sun	Dinner	4
181	23.33	5.65	Male	Yes	Sun	Dinner	2
182	45.35	3.50	Male	Yes	Sun	Dinner	3
183	23.17	6.50	Male	Yes	Sun	Dinner	4
184	40.55	3.00	Male	Yes	Sun	Dinner	2
185	20.69	5.00	Male	No	Sun	Dinner	5
186	20.90	3.50	Female	Yes	Sun	Dinner	3
187	30.46	2.00	Male	Yes	Sun	Dinner	5
188	18.15	3.50	Female	Yes	Sun	Dinner	3
189	23.10	4.00	Male	Yes	Sun	Dinner	3
190	15.69	1.50	Male	Yes	Sun	Dinner	2
191	19.81	4.19	Female	Yes	Thur	Lunch	2
192	28.44	2.56	Male	Yes	Thur	Lunch	2
193	15.48	2.02	Male	Yes	Thur	Lunch	2
194	16.58	4.00	Male	Yes	Thur	Lunch	2
195	7.56	1.44	Male	No	Thur	Lunch	2
196	10.34	2.00	Male	Yes	Thur	Lunch	2
197	43.11	5.00	Female	Yes	Thur	Lunch	4
198	13.00	2.00	Female	Yes	Thur	Lunch	2
199	13.51	2.00	Male	Yes	Thur	Lunch	2
200	18.71	4.00	Male	Yes	Thur	Lunch	3
201	12.74	2.01	Female	Yes	Thur	Lunch	2
202	13.00	2.00	Female	Yes	Thur	Lunch	2
203	16.40	2.50	Female	Yes	Thur	Lunch	2
204	20.53	4.00	Male	Yes	Thur	Lunch	4
205	16.47	3.23	Female	Yes	Thur	Lunch	3
206	26.59	3.41	Male	Yes	Sat	Dinner	3
207	38.73	3.00	Male	Yes	Sat	Dinner	4
208	24.27	2.03	Male	Yes	Sat	Dinner	2
209	12.76	2.23	Female	Yes	Sat	Dinner	2
210	30.06	2.00	Male	Yes	Sat	Dinner	3
211	25.89	5.16	Male	Yes	Sat	Dinner	4

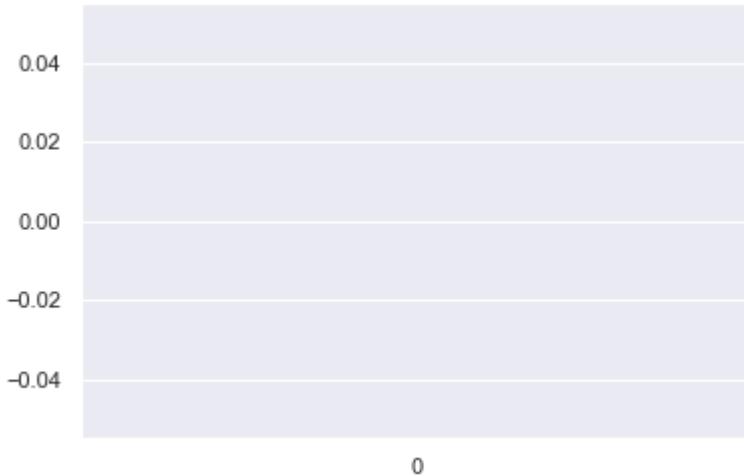
212	48.33	9.00	Male	No	Sat	Dinner	4
213	13.27	2.50	Female	Yes	Sat	Dinner	2
214	28.17	6.50	Female	Yes	Sat	Dinner	3
215	12.90	1.10	Female	Yes	Sat	Dinner	2
216	28.15	3.00	Male	Yes	Sat	Dinner	5
217	11.59	1.50	Male	Yes	Sat	Dinner	2
218	7.74	1.44	Male	Yes	Sat	Dinner	2
219	30.14	3.09	Female	Yes	Sat	Dinner	4
220	12.16	2.20	Male	Yes	Fri	Lunch	2
221	13.42	3.48	Female	Yes	Fri	Lunch	2
222	8.58	1.92	Male	Yes	Fri	Lunch	1
223	15.98	3.00	Female	No	Fri	Lunch	3
224	13.42	1.58	Male	Yes	Fri	Lunch	2
225	16.27	2.50	Female	Yes	Fri	Lunch	2
226	10.09	2.00	Female	Yes	Fri	Lunch	2
227	20.45	3.00	Male	No	Sat	Dinner	4
228	13.28	2.72	Male	No	Sat	Dinner	2
229	22.12	2.88	Female	Yes	Sat	Dinner	2
230	24.01	2.00	Male	Yes	Sat	Dinner	4
231	15.69	3.00	Male	Yes	Sat	Dinner	3
232	11.61	3.39	Male	No	Sat	Dinner	2
233	10.77	1.47	Male	No	Sat	Dinner	2
234	15.53	3.00	Male	Yes	Sat	Dinner	2
235	10.07	1.25	Male	No	Sat	Dinner	2
236	12.60	1.00	Male	Yes	Sat	Dinner	2
237	32.83	1.17	Male	Yes	Sat	Dinner	2
238	35.83	4.67	Female	No	Sat	Dinner	3
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

In [81]:

```
sns.barplot()
```

Out[81]:

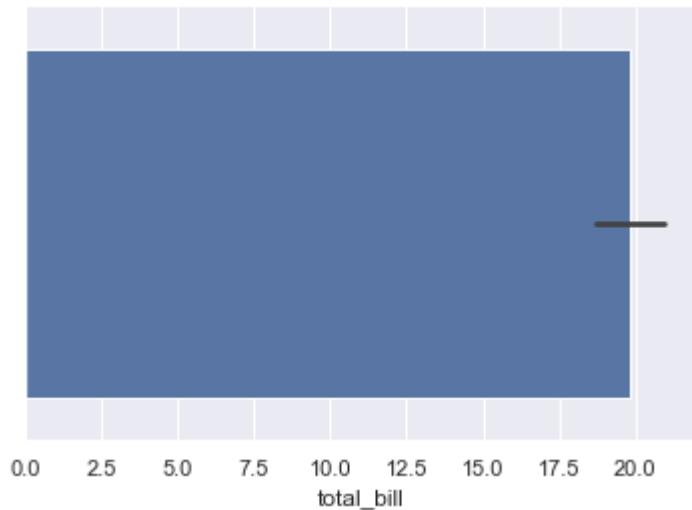
```
<AxesSubplot:>
```



```
sns.barplot( *, x=None, y=None, hue=None, data=None, order=None, hue_order=None, estimator=, ci=95, n_boot=1000, units=None, seed=None, orient=None, color=None, palette=None, saturation=0.75, errcolor='.26', errwidth=None, capsiz=None, dodge=True, ax=None, **kwargs, )Parameters ----- x, y, hue : names of variables in ``data`` or vector data, optional Inputs for plotting long-form data. See examples for interpretation. data : DataFrame, array, or list of arrays, optional Dataset for plotting. If ``x`` and ``y`` are absent, this is interpreted as wide-form. Otherwise it is expected to be long-form. order, hue_order : lists of strings, optional Order to plot the categorical levels in, otherwise the levels are inferred from the data objects. estimator : callable that maps vector -> scalar, optional Statistical function to estimate within each categorical bin. ci : float or "sd" or None, optional Size of confidence intervals to draw around estimated values. If "sd", skip bootstrapping and draw the standard deviation of the observations. If ``None``, no bootstrapping will be performed, and error bars will not be drawn. n_boot : int, optional Number of bootstrap iterations to use when computing confidence intervals. units : name of variable in ``data`` or vector data, optional Identifier of sampling units, which will be used to perform a multilevel bootstrap and account for repeated measures design. seed : int, numpy.random.Generator, or numpy.random.RandomState, optional Seed or random number generator for reproducible bootstrapping. orient : "v" | "h", optional Orientation of the plot (vertical or horizontal). This is usually inferred based on the type of the input variables, but it can be used to resolve ambiguity when both `x` and `y` are numeric or when plotting wide-form data. color : matplotlib color, optional Color for all of the elements, or seed for a gradient palette. palette : palette name, list, or dict Colors to use for the different levels of the ``hue`` variable. Should be something that can be interpreted by :func:`color_palette`, or a dictionary mapping hue levels to matplotlib colors. saturation : float, optional Proportion of the original saturation to draw colors at. Large patches often look better with slightly desaturated colors, but set this to ``1`` if you want the plot colors to perfectly match the input color spec. errcolor : matplotlib color Color for the lines that represent the confidence interval. errwidth : float, optional Thickness of error bar lines (and caps). capsiz : float, optional Width of the "caps" on error bars. dodge : bool, optional When hue nesting is used, whether elements should be shifted along the categorical axis. ax : matplotlib Axes, optional Axes object to draw the plot onto, otherwise uses the current Axes. kwargs : key, value mappings Other keyword arguments are passed through to :meth:`matplotlib.axes.Axes.bar`.
```

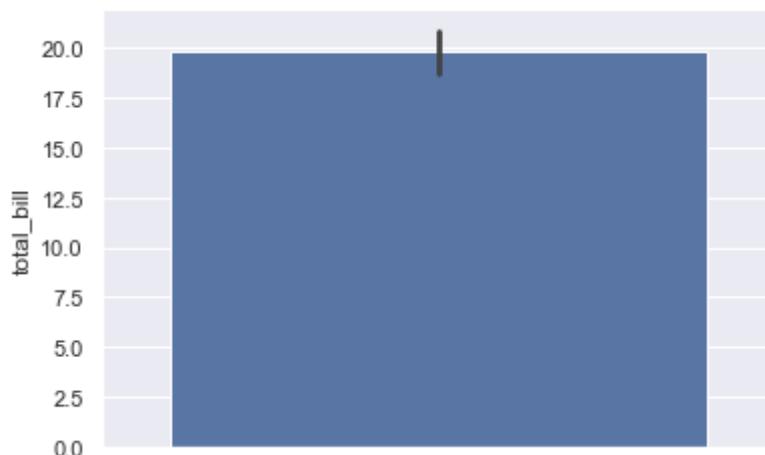
```
In [82]: sns.barplot(x= tips_df.total_bill)
```

```
Out[82]: <AxesSubplot:xlabel='total_bill'>
```



```
In [83]: sns.barplot(y= tips_df.total_bill)
```

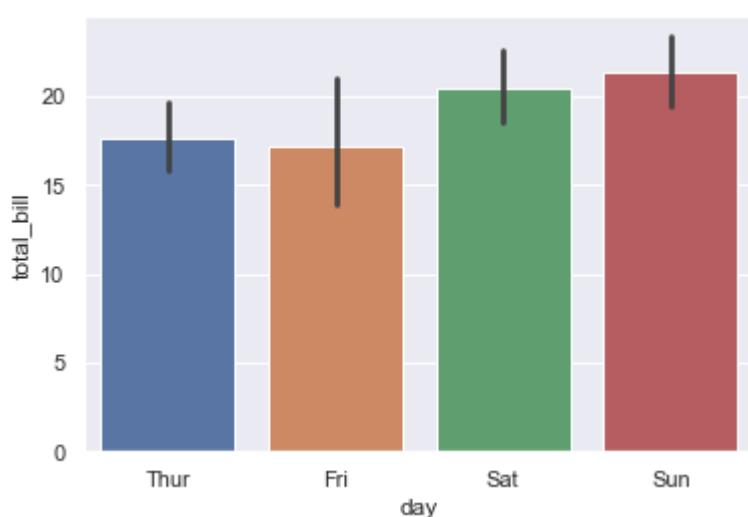
```
Out[83]: <AxesSubplot:ylabel='total_bill'>
```



## x,y parameter

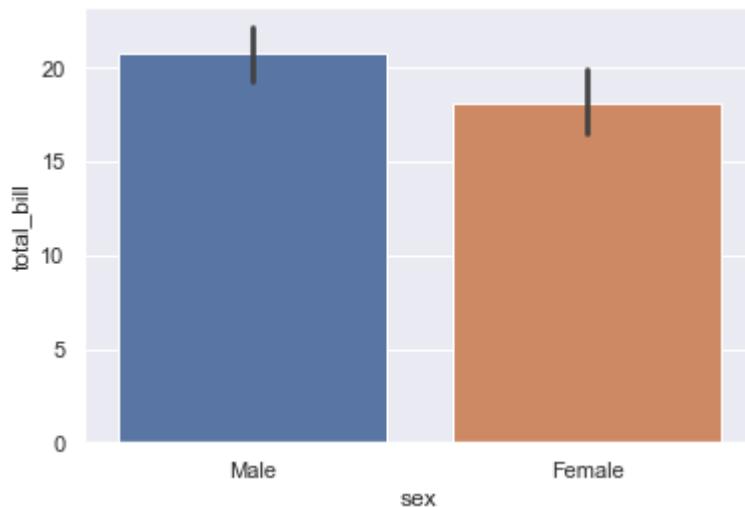
```
In [84]: sns.barplot(x=tips_df.day, y= tips_df.total_bill)
```

```
Out[84]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



```
In [85]: sns.barplot(x=tips_df.sex, y= tips_df.total_bill)
```

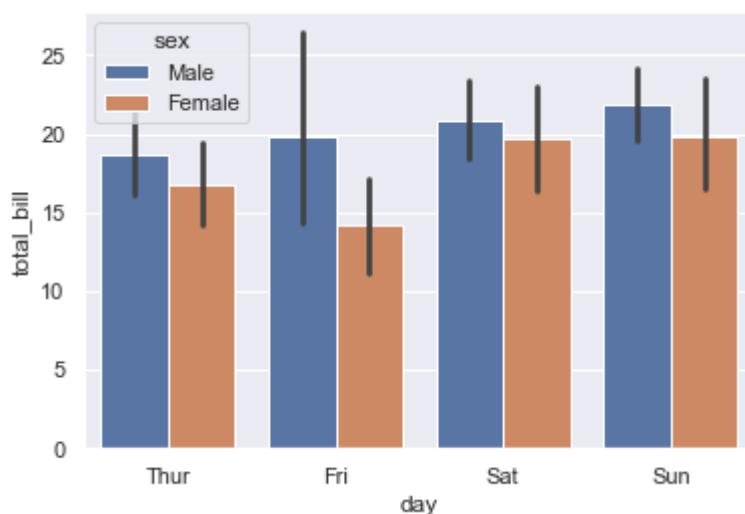
```
Out[85]: <AxesSubplot:xlabel='sex', ylabel='total_bill'>
```



hue :-names of variables in `data` or vector data, optional. Inputs for plotting long-form data. See examples for interpretation

```
In [86]: sns.barplot(x=tips_df.day, y= tips_df.total_bill, hue = tips_df.sex)
```

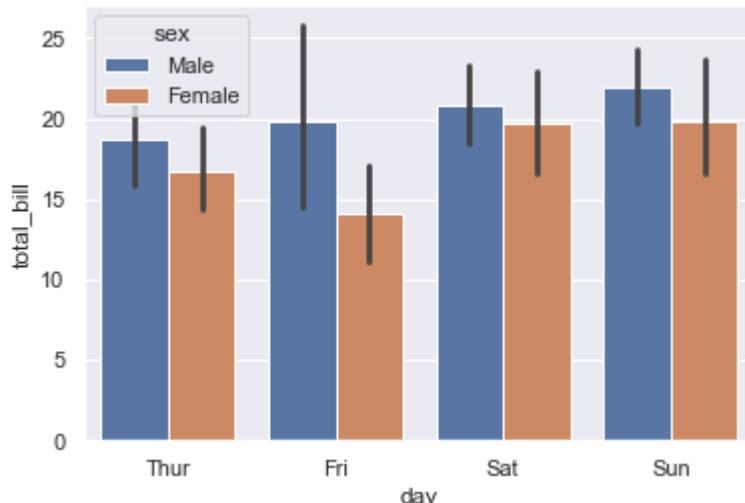
```
Out[86]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



data : DataFrame, array, or list of arrays, optional.Dataset for plotting. If `x` and `y` are absent, this is interpreted as wide-form. Otherwise it is expected to be long-form.

```
In [87]: sns.barplot(x='day', y='total_bill', hue ='sex',  
                  data = tips_df)
```

```
Out[87]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```

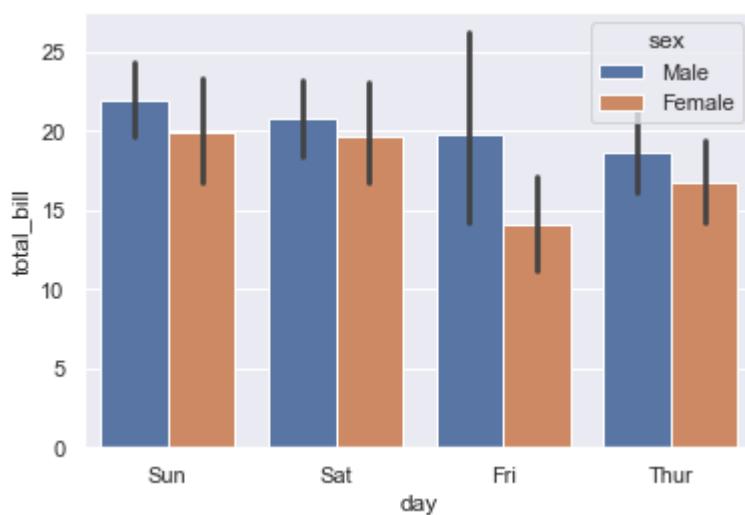


order, hue\_order : lists of strings,  
optional. Order to plot the categorical levels  
in, otherwise the levels are inferred from  
the data objects.

```
In [88]:
```

```
order = ['Sun', 'Sat', 'Fri', 'Thur']
sns.barplot(x='day', y='total_bill', hue='sex',
            data=tips_df, order=order)
```

```
Out[88]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```

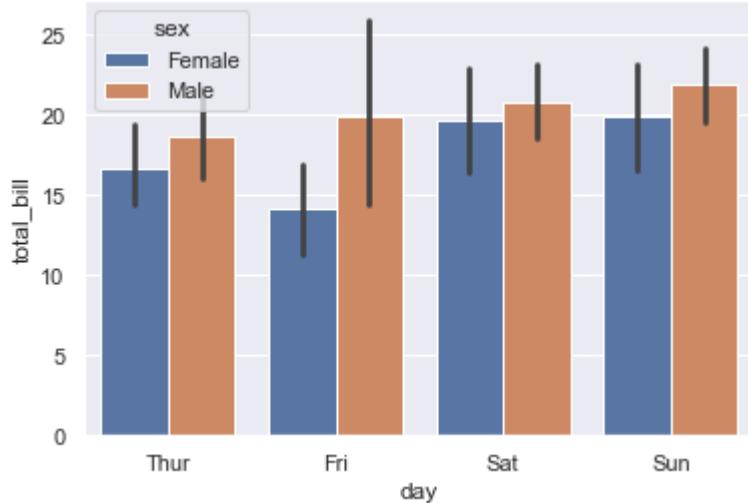


hue-order :- The bar value gets interchange

```
In [89]:
```

```
hue_order = ['Female', 'Male']
sns.barplot(x='day', y='total_bill', hue='sex',
            data=tips_df, hue_order=hue_order)
```

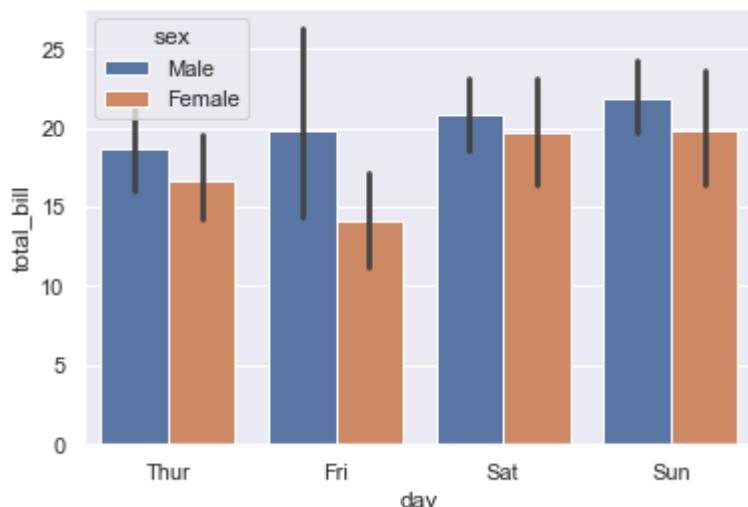
```
Out[89]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



estimator :-callable that maps vector -> scalar, optional. Statistical function to estimate within each categorical bin.

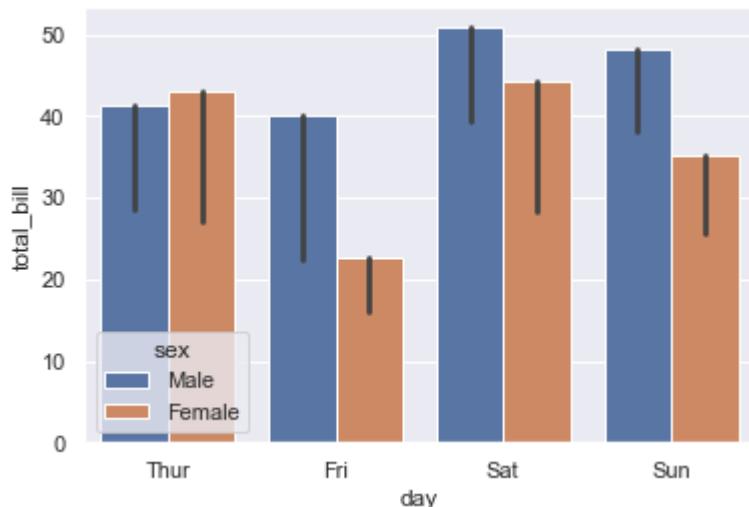
```
In [90]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df, estimator=np.mean)
```

```
Out[90]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



```
In [91]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df, estimator=np.max)
```

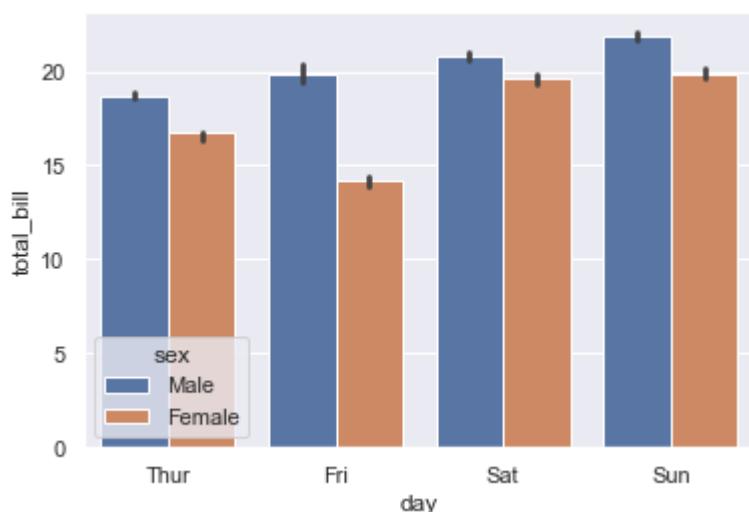
```
Out[91]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



**Confidence Interval:-**float or "sd" or None, optional. Size of confidence intervals to draw around estimated values. If "sd", skip bootstrapping and draw the standard deviation of the observations. If None , no bootstrapping will be performed, and error bars will not be drawn.

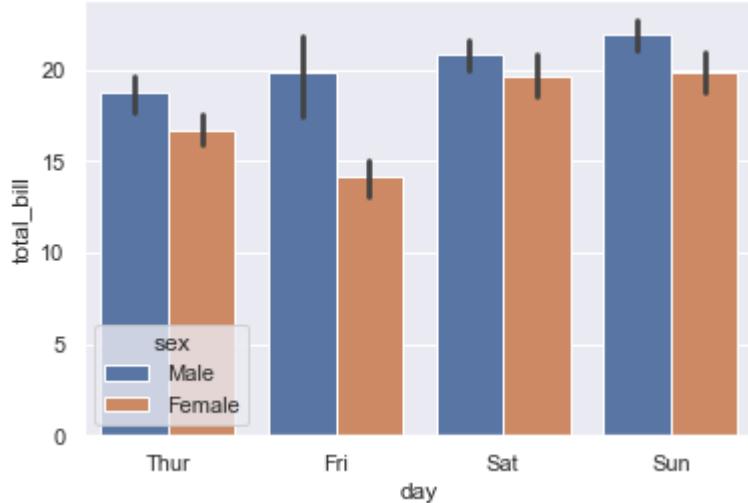
```
In [92]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df, ci=12)      # percentile must be in a range
```

```
Out[92]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



```
In [93]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df, ci=50)      # percentile must be in a range of
```

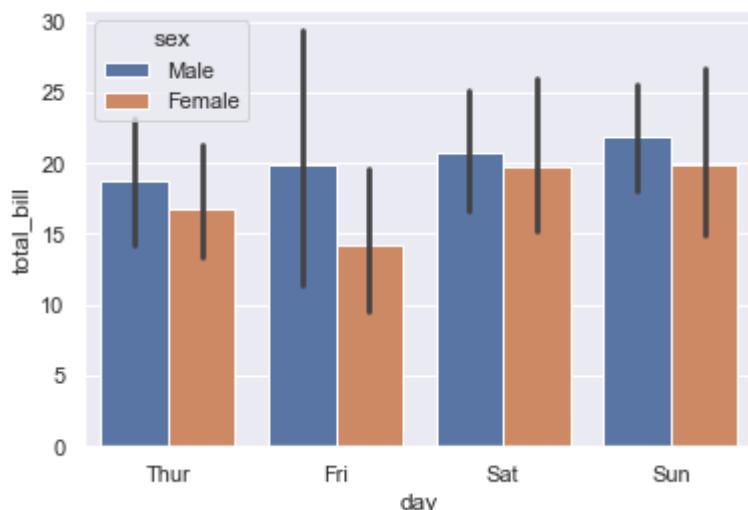
```
Out[93]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



In [94]:

```
sns.barplot(x='day', y='total_bill', hue ='sex',
            data = tips_df, ci=100)    # percentile must be in a range of
```

Out[94]:



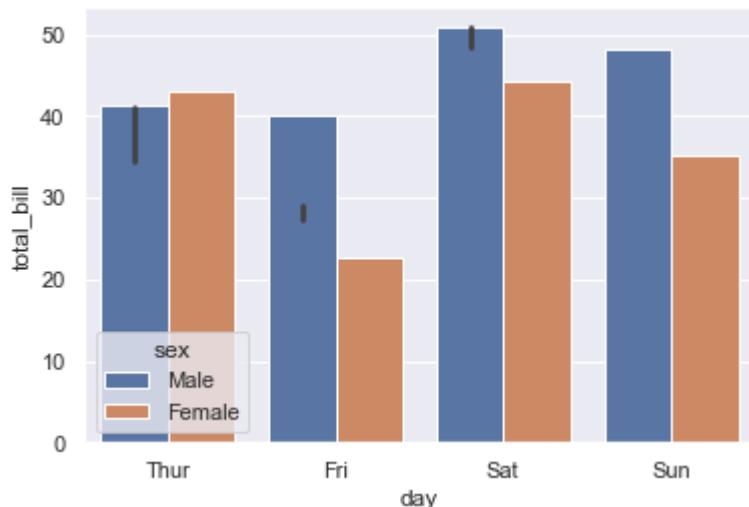
`n_boot` : int, optional. Number of bootstrap iterations to use when computing confidence intervals.

In [95]:

```
sns.barplot(x='day', y='total_bill', hue ='sex',
            data = tips_df, estimator=np.max, n_boot=2)
```

Out[95]:

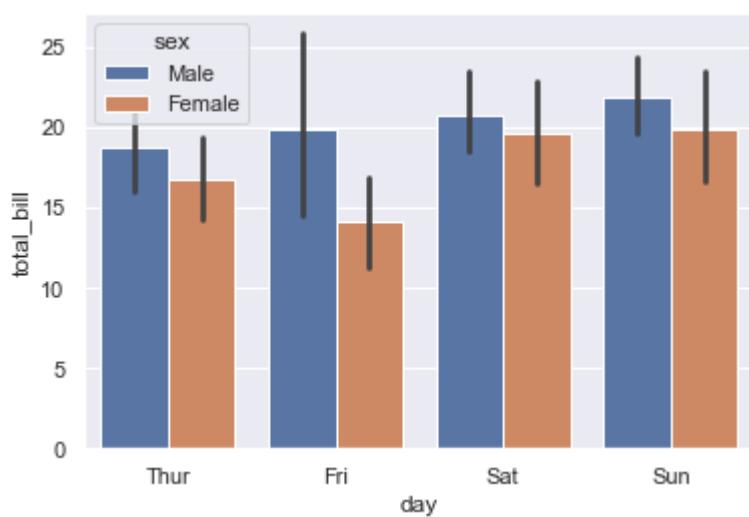
```
<AxesSubplot:xlabel='day', ylabel='total_bill'>
```



orient : "v" | "h", optional Orientation of the plot (vertical or horizontal). This is usually inferred based on the type of the input variables, but it can be used to resolve ambiguity when both `x` and `y` are numeric or when plotting wide-form data.

```
In [96]: sns.barplot(x='day', y='total_bill', hue ='sex',
                  data = tips_df, orient='v')
```

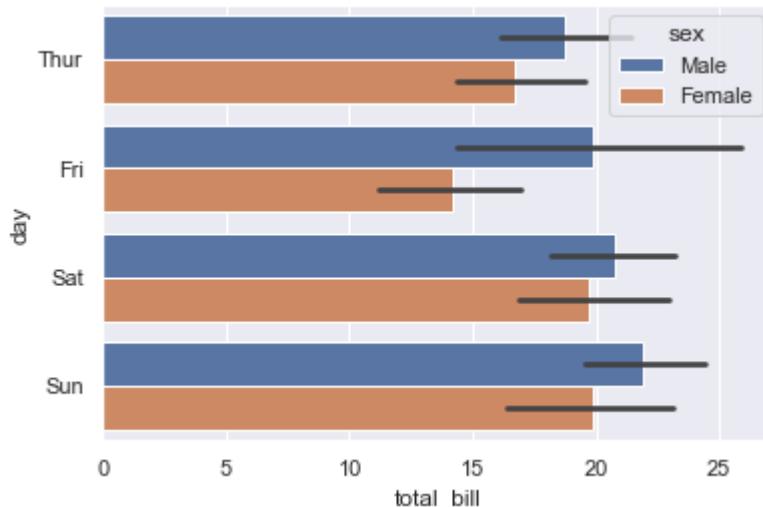
```
Out[96]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



In orient the plot can't be plotted horizontally so we can't use the function. Change the values by replacing `x` and `y` values

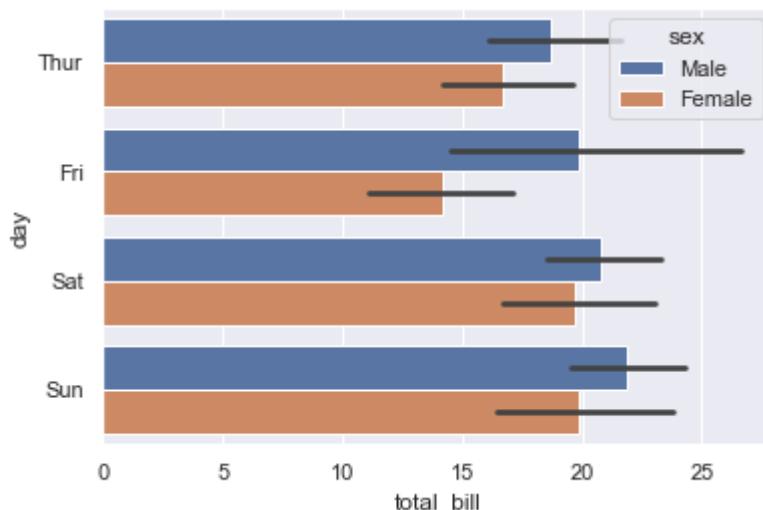
```
In [97]: sns.barplot(y='day', x='total_bill', hue ='sex',
                    data = tips_df)
```

```
Out[97]: <AxesSubplot:xlabel='total_bill', ylabel='day'>
```



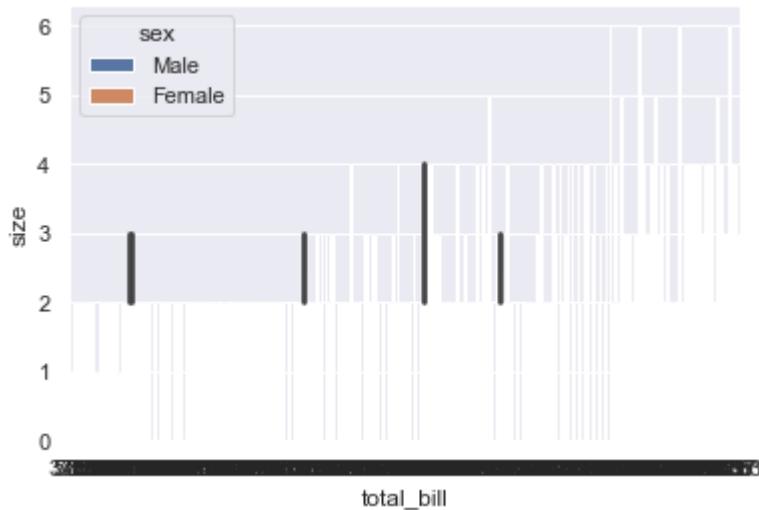
```
In [98]: sns.barplot(y='day', x='total_bill', hue ='sex',
                    data = tips_df, orient='h')
```

```
Out[98]: <AxesSubplot:xlabel='total_bill', ylabel='day'>
```



```
In [99]: sns.barplot(y='size', x='total_bill', hue ='sex',
                    data = tips_df, orient='v')
```

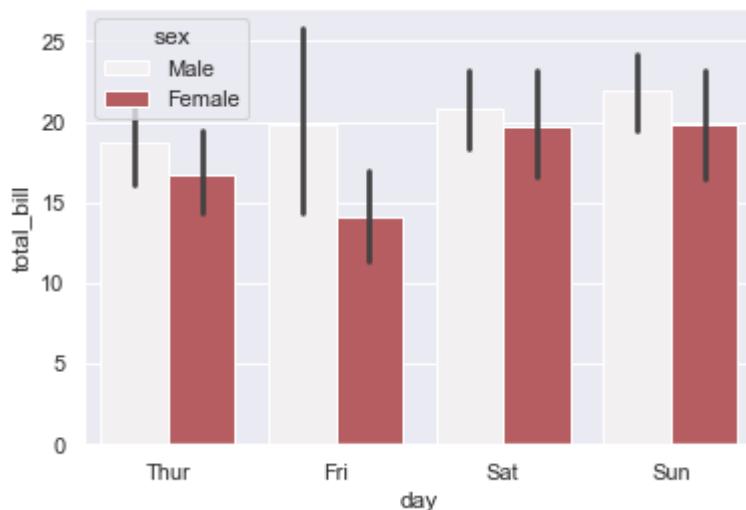
```
Out[99]: <AxesSubplot:xlabel='total_bill', ylabel='size'>
```



color : matplotlib color, optional. Color for all of the elements, or seed for a gradient palette.

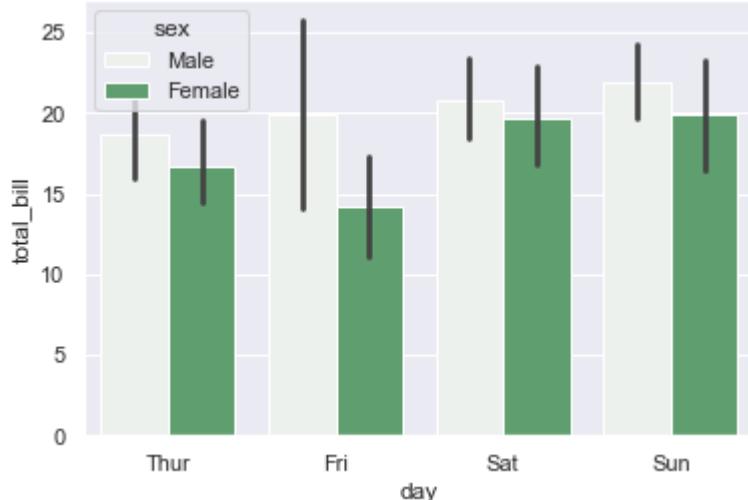
```
In [100...]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df, color='r')
```

```
Out[100...]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



```
In [101...]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df, color='g')
```

```
Out[101...]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```

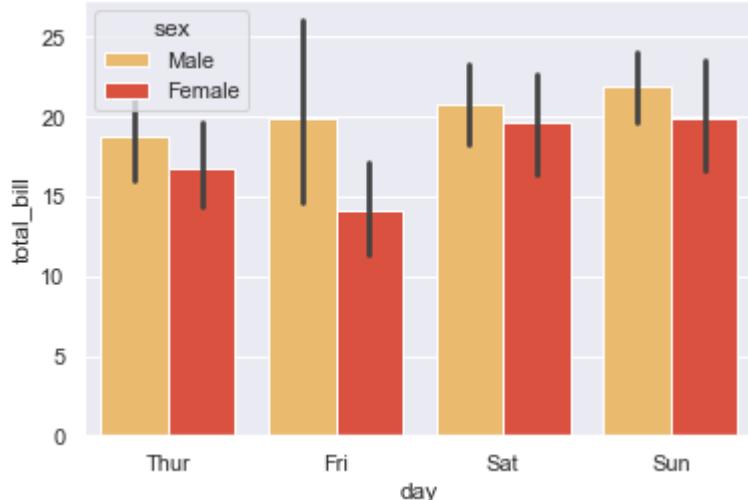


Supported values are : - 'Accent', 'Accent\_r', 'Blues', 'Blues\_r', 'BrBG', 'BrBG\_r', 'BuGn', 'BuGn\_r', 'BuPu', 'BuPu\_r', 'CMRmap', 'CMRmap\_r', 'Dark2', 'Dark2\_r', 'GnBu', 'GnBu\_r', 'Greens', 'Greens\_r', 'Greys', 'Greys\_r', 'OrRd', 'OrRd\_r', 'Oranges', 'Oranges\_r', 'PRGn', 'PRGn\_r', 'Paired', 'Paired\_r', 'Pastel1', 'Pastel1\_r', 'Pastel2', 'Pastel2\_r', 'PiYG', 'PiYG\_r', 'PuBu', 'PuBuGn', 'PuBuGn\_r', 'PuBu\_r', 'PuOr', 'PuOr\_r', 'PuRd', 'PuRd\_r', 'Purples', 'Purples\_r', 'RdBu', 'RdBu\_r', 'RdGy', 'RdGy\_r', 'RdPu', 'RdPu\_r', 'RdYlBu', 'RdYlBu\_r', 'RdYlGn', 'RdYlGn\_r', 'Reds', 'Reds\_r', 'Set1', 'Set1\_r', 'Set2', 'Set2\_r', 'Set3', 'Set3\_r', 'Spectral', 'Spectral\_r', 'Wistia', 'Wistia\_r', 'YIGn', 'YIGnBu', 'YIGnBu\_r', 'YIGn\_r', 'YIOrBr', 'YIOrBr\_r', 'YIOrRd', 'YIOrRd\_r', 'afmhot', 'afmhot\_r', 'autumn', 'autumn\_r', 'binary', 'binary\_r', 'bone', 'bone\_r', 'brg', 'brg\_r', 'bwr', 'bwr\_r', 'cividis', 'cividis\_r', 'cool', 'cool\_r', 'coolwarm', 'coolwarm\_r', 'copper', 'copper\_r', 'crest', 'crest\_r', 'cubehelix', 'cubehelix\_r', 'flag', 'flag\_r', 'flare', 'flare\_r', 'gist\_earth', 'gist\_earth\_r', 'gist\_gray', 'gist\_gray\_r', 'gist\_heat', 'gist\_heat\_r', 'gist\_ncar', 'gist\_ncar\_r', 'gist\_rainbow', 'gist\_rainbow\_r', 'gist\_stern', 'gist\_stern\_r', 'gist\_yarg', 'gist\_yarg\_r', 'gnuplot', 'gnuplot2', 'gnuplot2\_r', 'gnuplot\_r', 'gray', 'gray\_r', 'hot', 'hot\_r', 'hsv', 'hsv\_r', 'icefire', 'icefire\_r', 'inferno', 'inferno\_r', 'jet', 'jet\_r', 'magma', 'magma\_r', 'mako', 'mako\_r', 'nipy\_spectral', 'nipy\_spectral\_r', 'ocean', 'ocean\_r', 'pink', 'pink\_r', 'plasma', 'plasma\_r', 'prism', 'prism\_r', 'rainbow', 'rainbow\_r', 'rocket', 'rocket\_r', 'seismic', 'seismic\_r', 'spring', 'spring\_r', 'summer', 'summer\_r', 'tab10', 'tab10\_r', 'tab20', 'tab20\_r', 'tab20b', 'tab20b\_r', 'tab20c', 'tab20c\_r', 'terrain', 'terrain\_r', 'turbo', 'turbo\_r', 'twilight', 'twilight\_r', 'twilight\_shifted', 'twilight\_shifted\_r', 'viridis', 'viridis\_r', 'vlag', 'vlag\_r', 'winter', 'winter\_r'

**palette** : palette name, list, or dict Colors to use for the different levels of the `hue` variable. Should be something that can be interpreted by :func: `color_palette`, or a dictionary mapping hue levels to matplotlib colors.

```
In [102...]: sns.barplot(x='day', y='total_bill', hue ='sex',
                    data = tips_df, palette='YlOrRd')
```

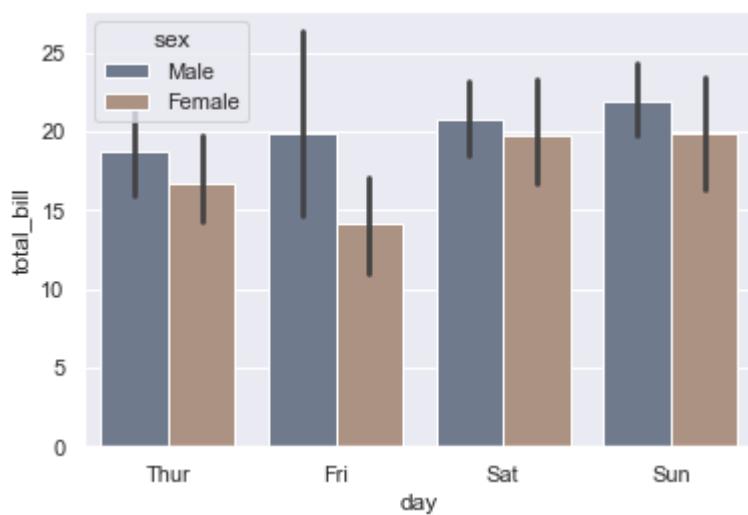
```
Out[102...]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



**saturation** : float, optional Proportion of the original saturation to draw colors at. Large patches often look better with slightly desaturated colors, but set this to `1` if you want the plot colors to perfectly match the input color spec.

```
In [103...]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df,saturation=0.3)
```

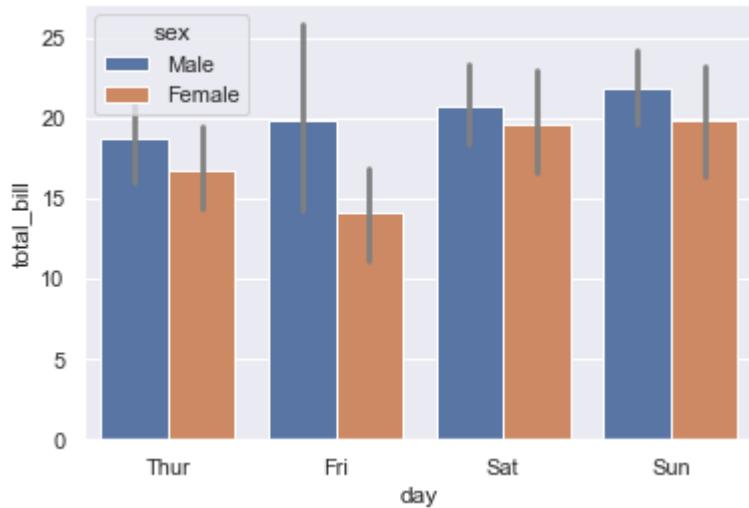
```
Out[103...]: <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



**errcolor** : matplotlib color Color for the lines that represent the confidence interval.

```
In [104...]: sns.barplot(x='day', y='total_bill', hue ='sex',
                 data = tips_df,errcolor='0.5')
```

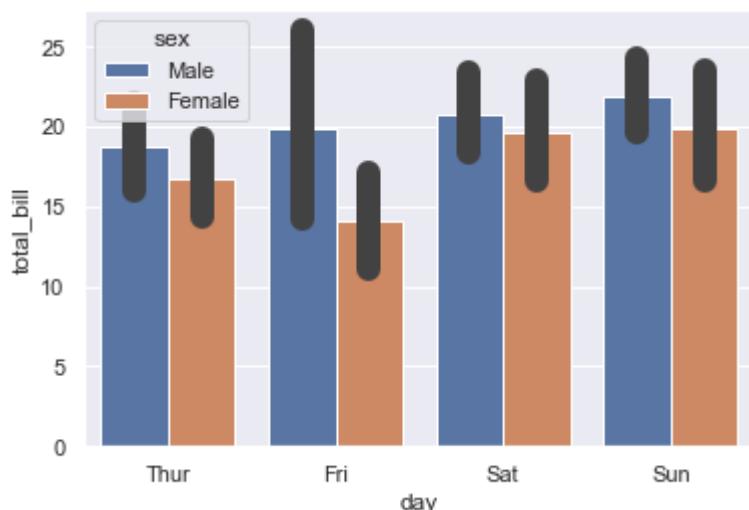
```
Out[104... <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



**errwidth : float, optional** Thickness of error bar lines (and caps).

```
In [105... sns.barplot(x='day', y='total_bill', hue ='sex',
                    data = tips_df,errwidth=12)
```

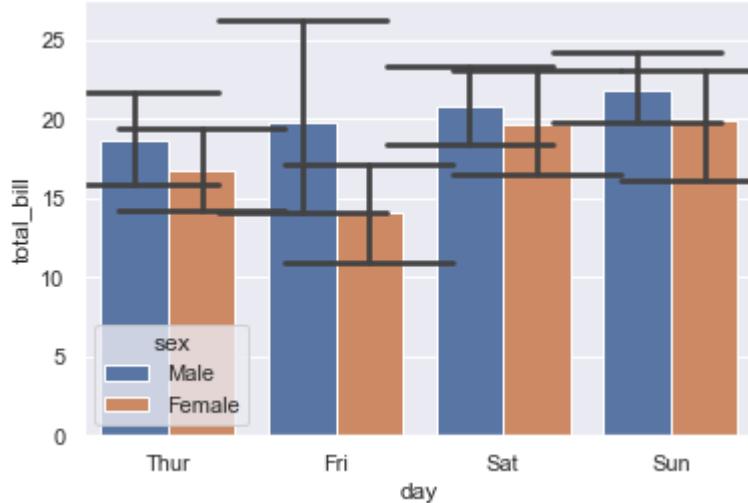
```
Out[105... <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



**capsize : float, optional** Width of the "caps" on error bars.

```
In [106... sns.barplot(x='day', y='total_bill', hue ='sex',
                    data = tips_df,capsize=1)
```

```
Out[106... <AxesSubplot:xlabel='day', ylabel='total_bill'>
```

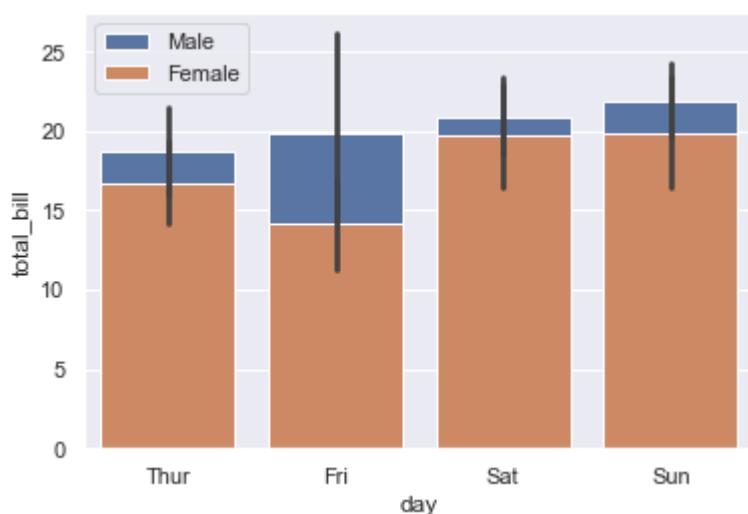


dodge : bool, optional When hue nesting is used, whether elements should be shifted along the categorical axis.

Dodge :- To be used to plot 2 values in one graph.

```
In [107...]: sns.barplot(x='day', y='total_bill', hue ='sex',
                  data = tips_df,dodge=False)
plt.legend()
```

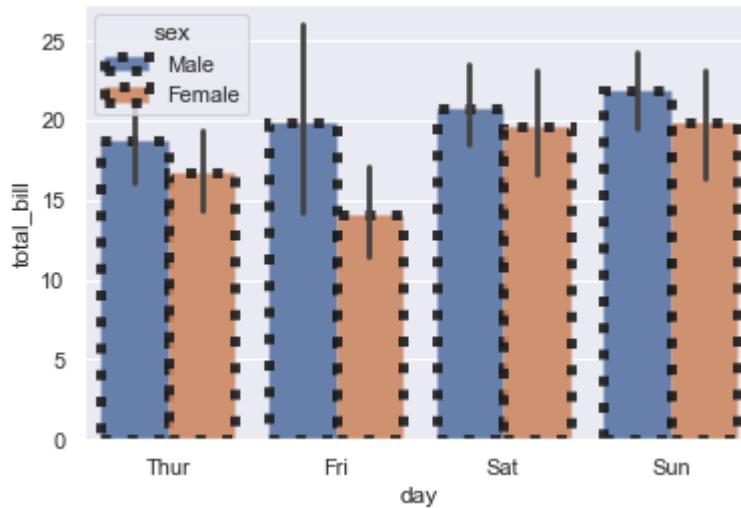
```
Out[107...]: <matplotlib.legend.Legend at 0x2094fba4e80>
```



kwargs :-key word arguments key, value mappings. Other keyword arguments are passed through to :meth:matplotlib.axes.Axes.bar.

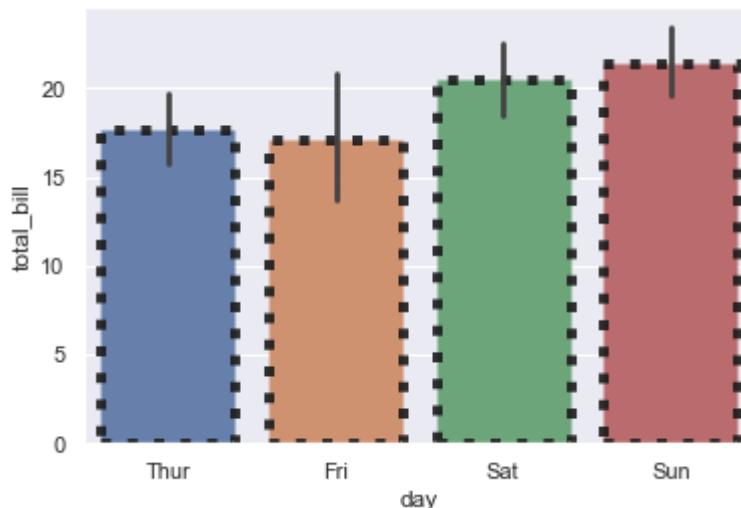
```
In [108...     kwargs= {'alpha':0.9, 'linestyle':'-', 'linewidth':5, 'edgecolor':'k'}
      sns.barplot(x='day', y='total_bill', hue ='sex',
                  data = tips_df,**kwargs)
```

```
Out[108... <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



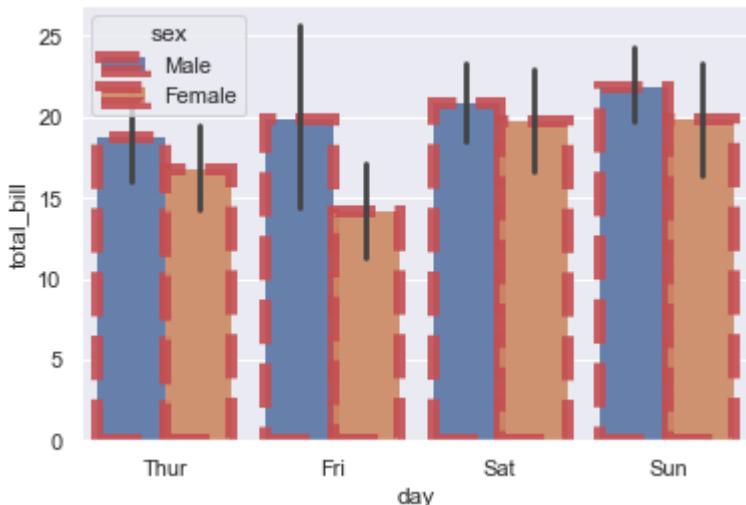
```
In [109...     sns.set()
      kwargs = {'alpha':0.9, 'linestyle':'-', 'linewidth':5, 'edgecolor':'k'}
      sns.barplot(x= 'day', y= 'total_bill', data = tips_df,**kwargs)
```

```
Out[109... <AxesSubplot:xlabel='day', ylabel='total_bill'>
```



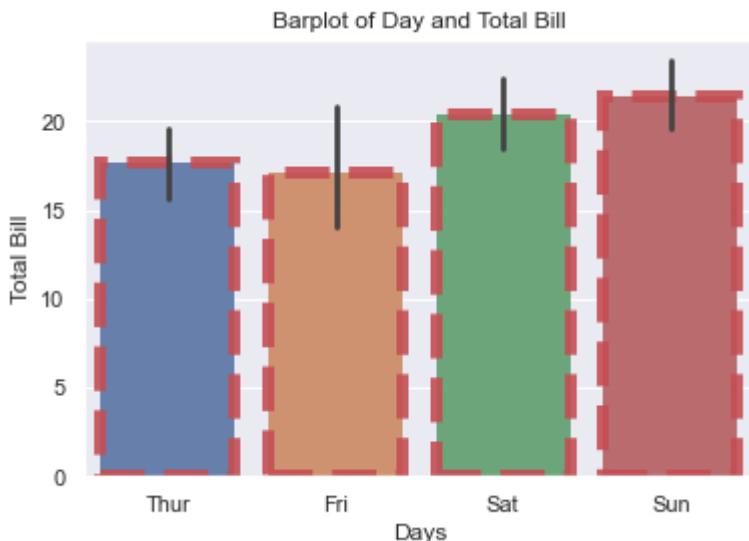
```
In [110...     sns.barplot(x='day', y='total_bill', hue ='sex',
                  data = tips_df, alpha = 0.9, linestyle="--", linewidth = 6 ,
```

```
Out[110... <AxesSubplot:xlabel='day', ylabel='total_bill'>
```

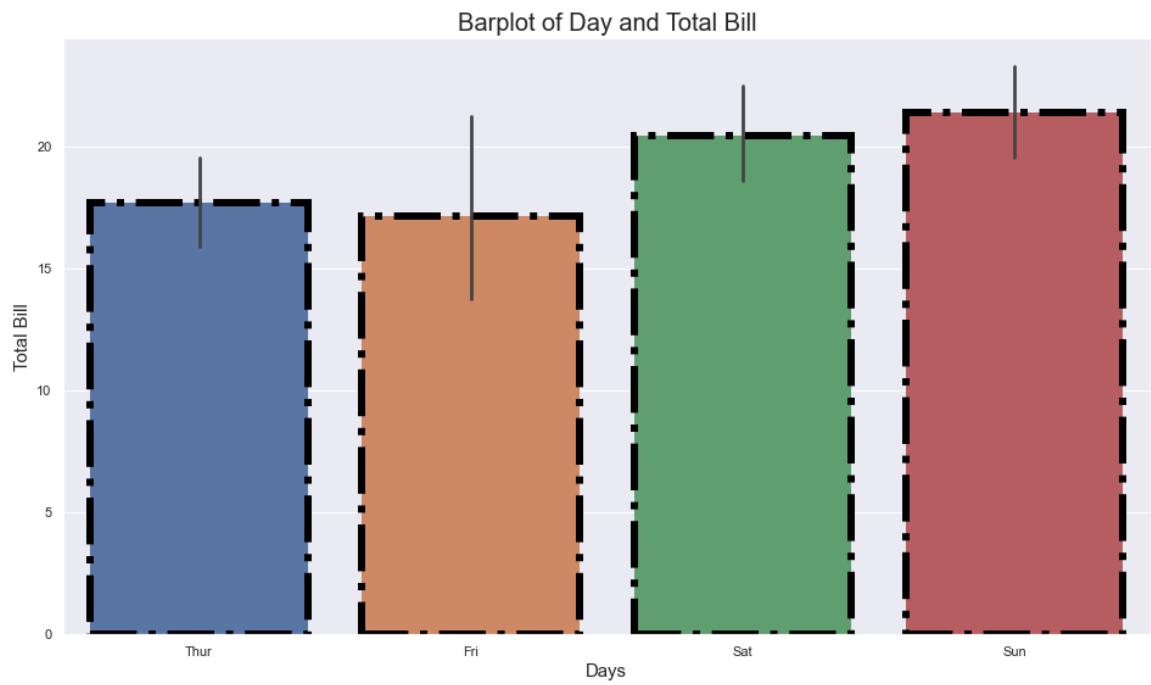


```
In [111...]: ax=sns.barplot(x='day', y='total_bill',
                   data = tips_df, alpha = 0.9, linestyle="--", linewidth = 6 ,
                   edgecolor="r")
ax.set(title = "Barplot of Day and Total Bill",
       xlabel= "Days",
       ylabel= "Total Bill")
```

```
Out[111...]: [Text(0.5, 1.0, 'Barplot of Day and Total Bill'),
Text(0.5, 0, 'Days'),
Text(0, 0.5, 'Total Bill')]
```



```
In [112...]: plt.figure(figsize = (16,9))
sns.barplot(x = 'day', y = 'total_bill',
            data = tips_df, alpha = 1, linestyle="-.", linewidth = 6 ,
            edgecolor="black")
plt.title("Barplot of Day and Total Bill", fontsize=20)
plt.xlabel("Days",fontsize=15)
plt.ylabel("Total Bill",fontsize=15)
plt.show()
plt.savefig("Barplot of Day and Total Bill") #to save image
```



<Figure size 432x288 with 0 Axes>

## How to Draw Seaborn Scatter Plot ?

In [113...]

```
import seaborn as sns
import matplotlib.pyplot as plt
```

In [114...]

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

Out[114...]

	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	who	adu
0	0	3	male	22.0	1	0	7.2500	S	Third	man	
1	1	1	female	38.0	1	0	71.2833	C	First	woman	
2	1	3	female	26.0	0	0	7.9250	S	Third	woman	
3	1	1	female	35.0	1	0	53.1000	S	First	woman	
4	0	3	male	35.0	0	0	8.0500	S	Third	man	
...	...	...	...	...	...	...	...	...	...	...	...
886	0	2	male	27.0	0	0	13.0000	S	Second	man	
887	1	1	female	19.0	0	0	30.0000	S	First	woman	
888	0	3	female	NaN	1	2	23.4500	S	Third	woman	
889	1	1	male	26.0	0	0	30.0000	C	First	man	
890	0	3	male	32.0	0	0	7.7500	Q	Third	man	

891 rows × 15 columns

In [115...]

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pd.set_option('display.max_rows', 891)
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In [116...]

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titanic_df.head(891)
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Out[116...]

	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	who	a
0	0	3	male	22.00	1	0	7.2500	S	Third	man	
1	1	1	female	38.00	1	0	71.2833	C	First	woman	
2	1	3	female	26.00	0	0	7.9250	S	Third	woman	
3	1	1	female	35.00	1	0	53.1000	S	First	woman	
4	0	3	male	35.00	0	0	8.0500	S	Third	man	
5	0	3	male	Nan	0	0	8.4583	Q	Third	man	
6	0	1	male	54.00	0	0	51.8625	S	First	man	
7	0	3	male	2.00	3	1	21.0750	S	Third	child	
8	1	3	female	27.00	0	2	11.1333	S	Third	woman	
9	1	2	female	14.00	1	0	30.0708	C	Second	child	
10	1	3	female	4.00	1	1	16.7000	S	Third	child	
11	1	1	female	58.00	0	0	26.5500	S	First	woman	
12	0	3	male	20.00	0	0	8.0500	S	Third	man	
13	0	3	male	39.00	1	5	31.2750	S	Third	man	
14	0	3	female	14.00	0	0	7.8542	S	Third	child	
15	1	2	female	55.00	0	0	16.0000	S	Second	woman	
16	0	3	male	2.00	4	1	29.1250	Q	Third	child	
17	1	2	male	Nan	0	0	13.0000	S	Second	man	
18	0	3	female	31.00	1	0	18.0000	S	Third	woman	
19	1	3	female	Nan	0	0	7.2250	C	Third	woman	
20	0	2	male	35.00	0	0	26.0000	S	Second	man	
21	1	2	male	34.00	0	0	13.0000	S	Second	man	
22	1	3	female	15.00	0	0	8.0292	Q	Third	child	
23	1	1	male	28.00	0	0	35.5000	S	First	man	
24	0	3	female	8.00	3	1	21.0750	S	Third	child	
25	1	3	female	38.00	1	5	31.3875	S	Third	woman	
26	0	3	male	Nan	0	0	7.2250	C	Third	man	
27	0	1	male	19.00	3	2	263.0000	S	First	man	
28	1	3	female	Nan	0	0	7.8792	Q	Third	woman	
29	0	3	male	Nan	0	0	7.8958	S	Third	man	
30	0	1	male	40.00	0	0	27.7208	C	First	man	
31	1	1	female	Nan	1	0	146.5208	C	First	woman	
32	1	3	female	Nan	0	0	7.7500	Q	Third	woman	
33	0	2	male	66.00	0	0	10.5000	S	Second	man	
34	0	1	male	28.00	1	0	82.1708	C	First	man	
35	0	1	male	42.00	1	0	52.0000	S	First	man	
36	1	3	male	Nan	0	0	7.2292	C	Third	man	
37	0	3	male	21.00	0	0	8.0500	S	Third	man	

38	0	3	female	18.00	2	0	18.0000	S	Third	woman
39	1	3	female	14.00	1	0	11.2417	C	Third	child
40	0	3	female	40.00	1	0	9.4750	S	Third	woman
41	0	2	female	27.00	1	0	21.0000	S	Second	woman
42	0	3	male	NaN	0	0	7.8958	C	Third	man
43	1	2	female	3.00	1	2	41.5792	C	Second	child
44	1	3	female	19.00	0	0	7.8792	Q	Third	woman
45	0	3	male	NaN	0	0	8.0500	S	Third	man
46	0	3	male	NaN	1	0	15.5000	Q	Third	man
47	1	3	female	NaN	0	0	7.7500	Q	Third	woman
48	0	3	male	NaN	2	0	21.6792	C	Third	man
49	0	3	female	18.00	1	0	17.8000	S	Third	woman
50	0	3	male	7.00	4	1	39.6875	S	Third	child
51	0	3	male	21.00	0	0	7.8000	S	Third	man
52	1	1	female	49.00	1	0	76.7292	C	First	woman
53	1	2	female	29.00	1	0	26.0000	S	Second	woman
54	0	1	male	65.00	0	1	61.9792	C	First	man
55	1	1	male	NaN	0	0	35.5000	S	First	man
56	1	2	female	21.00	0	0	10.5000	S	Second	woman
57	0	3	male	28.50	0	0	7.2292	C	Third	man
58	1	2	female	5.00	1	2	27.7500	S	Second	child
59	0	3	male	11.00	5	2	46.9000	S	Third	child
60	0	3	male	22.00	0	0	7.2292	C	Third	man
61	1	1	female	38.00	0	0	80.0000	NaN	First	woman
62	0	1	male	45.00	1	0	83.4750	S	First	man
63	0	3	male	4.00	3	2	27.9000	S	Third	child
64	0	1	male	NaN	0	0	27.7208	C	First	man
65	1	3	male	NaN	1	1	15.2458	C	Third	man
66	1	2	female	29.00	0	0	10.5000	S	Second	woman
67	0	3	male	19.00	0	0	8.1583	S	Third	man
68	1	3	female	17.00	4	2	7.9250	S	Third	woman
69	0	3	male	26.00	2	0	8.6625	S	Third	man
70	0	2	male	32.00	0	0	10.5000	S	Second	man
71	0	3	female	16.00	5	2	46.9000	S	Third	woman
72	0	2	male	21.00	0	0	73.5000	S	Second	man
73	0	3	male	26.00	1	0	14.4542	C	Third	man
74	1	3	male	32.00	0	0	56.4958	S	Third	man
75	0	3	male	25.00	0	0	7.6500	S	Third	man
76	0	3	male	NaN	0	0	7.8958	S	Third	man

77	0	3	male	NaN	0	0	8.0500	S	Third	man
78	1	2	male	0.83	0	2	29.0000	S	Second	child
79	1	3	female	30.00	0	0	12.4750	S	Third	woman
80	0	3	male	22.00	0	0	9.0000	S	Third	man
81	1	3	male	29.00	0	0	9.5000	S	Third	man
82	1	3	female	NaN	0	0	7.7875	Q	Third	woman
83	0	1	male	28.00	0	0	47.1000	S	First	man
84	1	2	female	17.00	0	0	10.5000	S	Second	woman
85	1	3	female	33.00	3	0	15.8500	S	Third	woman
86	0	3	male	16.00	1	3	34.3750	S	Third	man
87	0	3	male	NaN	0	0	8.0500	S	Third	man
88	1	1	female	23.00	3	2	263.0000	S	First	woman
89	0	3	male	24.00	0	0	8.0500	S	Third	man
90	0	3	male	29.00	0	0	8.0500	S	Third	man
91	0	3	male	20.00	0	0	7.8542	S	Third	man
92	0	1	male	46.00	1	0	61.1750	S	First	man
93	0	3	male	26.00	1	2	20.5750	S	Third	man
94	0	3	male	59.00	0	0	7.2500	S	Third	man
95	0	3	male	NaN	0	0	8.0500	S	Third	man
96	0	1	male	71.00	0	0	34.6542	C	First	man
97	1	1	male	23.00	0	1	63.3583	C	First	man
98	1	2	female	34.00	0	1	23.0000	S	Second	woman
99	0	2	male	34.00	1	0	26.0000	S	Second	man
100	0	3	female	28.00	0	0	7.8958	S	Third	woman
101	0	3	male	NaN	0	0	7.8958	S	Third	man
102	0	1	male	21.00	0	1	77.2875	S	First	man
103	0	3	male	33.00	0	0	8.6542	S	Third	man
104	0	3	male	37.00	2	0	7.9250	S	Third	man
105	0	3	male	28.00	0	0	7.8958	S	Third	man
106	1	3	female	21.00	0	0	7.6500	S	Third	woman
107	1	3	male	NaN	0	0	7.7750	S	Third	man
108	0	3	male	38.00	0	0	7.8958	S	Third	man
109	1	3	female	NaN	1	0	24.1500	Q	Third	woman
110	0	1	male	47.00	0	0	52.0000	S	First	man
111	0	3	female	14.50	1	0	14.4542	C	Third	child
112	0	3	male	22.00	0	0	8.0500	S	Third	man
113	0	3	female	20.00	1	0	9.8250	S	Third	woman
114	0	3	female	17.00	0	0	14.4583	C	Third	woman
115	0	3	male	21.00	0	0	7.9250	S	Third	man

116	0	3	male	70.50	0	0	7.7500	Q	Third	man
117	0	2	male	29.00	1	0	21.0000	S	Second	man
118	0	1	male	24.00	0	1	247.5208	C	First	man
119	0	3	female	2.00	4	2	31.2750	S	Third	child
120	0	2	male	21.00	2	0	73.5000	S	Second	man
121	0	3	male	Nan	0	0	8.0500	S	Third	man
122	0	2	male	32.50	1	0	30.0708	C	Second	man
123	1	2	female	32.50	0	0	13.0000	S	Second	woman
124	0	1	male	54.00	0	1	77.2875	S	First	man
125	1	3	male	12.00	1	0	11.2417	C	Third	child
126	0	3	male	Nan	0	0	7.7500	Q	Third	man
127	1	3	male	24.00	0	0	7.1417	S	Third	man
128	1	3	female	Nan	1	1	22.3583	C	Third	woman
129	0	3	male	45.00	0	0	6.9750	S	Third	man
130	0	3	male	33.00	0	0	7.8958	C	Third	man
131	0	3	male	20.00	0	0	7.0500	S	Third	man
132	0	3	female	47.00	1	0	14.5000	S	Third	woman
133	1	2	female	29.00	1	0	26.0000	S	Second	woman
134	0	2	male	25.00	0	0	13.0000	S	Second	man
135	0	2	male	23.00	0	0	15.0458	C	Second	man
136	1	1	female	19.00	0	2	26.2833	S	First	woman
137	0	1	male	37.00	1	0	53.1000	S	First	man
138	0	3	male	16.00	0	0	9.2167	S	Third	man
139	0	1	male	24.00	0	0	79.2000	C	First	man
140	0	3	female	Nan	0	2	15.2458	C	Third	woman
141	1	3	female	22.00	0	0	7.7500	S	Third	woman
142	1	3	female	24.00	1	0	15.8500	S	Third	woman
143	0	3	male	19.00	0	0	6.7500	Q	Third	man
144	0	2	male	18.00	0	0	11.5000	S	Second	man
145	0	2	male	19.00	1	1	36.7500	S	Second	man
146	1	3	male	27.00	0	0	7.7958	S	Third	man
147	0	3	female	9.00	2	2	34.3750	S	Third	child
148	0	2	male	36.50	0	2	26.0000	S	Second	man
149	0	2	male	42.00	0	0	13.0000	S	Second	man
150	0	2	male	51.00	0	0	12.5250	S	Second	man
151	1	1	female	22.00	1	0	66.6000	S	First	woman
152	0	3	male	55.50	0	0	8.0500	S	Third	man
153	0	3	male	40.50	0	2	14.5000	S	Third	man
154	0	3	male	Nan	0	0	7.3125	S	Third	man

155	0	1	male	51.00	0	1	61.3792	C	First	man
156	1	3	female	16.00	0	0	7.7333	Q	Third	woman
157	0	3	male	30.00	0	0	8.0500	S	Third	man
158	0	3	male	Nan	0	0	8.6625	S	Third	man
159	0	3	male	Nan	8	2	69.5500	S	Third	man
160	0	3	male	44.00	0	1	16.1000	S	Third	man
161	1	2	female	40.00	0	0	15.7500	S	Second	woman
162	0	3	male	26.00	0	0	7.7750	S	Third	man
163	0	3	male	17.00	0	0	8.6625	S	Third	man
164	0	3	male	1.00	4	1	39.6875	S	Third	child
165	1	3	male	9.00	0	2	20.5250	S	Third	child
166	1	1	female	Nan	0	1	55.0000	S	First	woman
167	0	3	female	45.00	1	4	27.9000	S	Third	woman
168	0	1	male	Nan	0	0	25.9250	S	First	man
169	0	3	male	28.00	0	0	56.4958	S	Third	man
170	0	1	male	61.00	0	0	33.5000	S	First	man
171	0	3	male	4.00	4	1	29.1250	Q	Third	child
172	1	3	female	1.00	1	1	11.1333	S	Third	child
173	0	3	male	21.00	0	0	7.9250	S	Third	man
174	0	1	male	56.00	0	0	30.6958	C	First	man
175	0	3	male	18.00	1	1	7.8542	S	Third	man
176	0	3	male	Nan	3	1	25.4667	S	Third	man
177	0	1	female	50.00	0	0	28.7125	C	First	woman
178	0	2	male	30.00	0	0	13.0000	S	Second	man
179	0	3	male	36.00	0	0	0.0000	S	Third	man
180	0	3	female	Nan	8	2	69.5500	S	Third	woman
181	0	2	male	Nan	0	0	15.0500	C	Second	man
182	0	3	male	9.00	4	2	31.3875	S	Third	child
183	1	2	male	1.00	2	1	39.0000	S	Second	child
184	1	3	female	4.00	0	2	22.0250	S	Third	child
185	0	1	male	Nan	0	0	50.0000	S	First	man
186	1	3	female	Nan	1	0	15.5000	Q	Third	woman
187	1	1	male	45.00	0	0	26.5500	S	First	man
188	0	3	male	40.00	1	1	15.5000	Q	Third	man
189	0	3	male	36.00	0	0	7.8958	S	Third	man
190	1	2	female	32.00	0	0	13.0000	S	Second	woman
191	0	2	male	19.00	0	0	13.0000	S	Second	man
192	1	3	female	19.00	1	0	7.8542	S	Third	woman
193	1	2	male	3.00	1	1	26.0000	S	Second	child

194	1	1	female	44.00	0	0	27.7208	C	First	woman
195	1	1	female	58.00	0	0	146.5208	C	First	woman
196	0	3	male	NaN	0	0	7.7500	Q	Third	man
197	0	3	male	42.00	0	1	8.4042	S	Third	man
198	1	3	female	NaN	0	0	7.7500	Q	Third	woman
199	0	2	female	24.00	0	0	13.0000	S	Second	woman
200	0	3	male	28.00	0	0	9.5000	S	Third	man
201	0	3	male	NaN	8	2	69.5500	S	Third	man
202	0	3	male	34.00	0	0	6.4958	S	Third	man
203	0	3	male	45.50	0	0	7.2250	C	Third	man
204	1	3	male	18.00	0	0	8.0500	S	Third	man
205	0	3	female	2.00	0	1	10.4625	S	Third	child
206	0	3	male	32.00	1	0	15.8500	S	Third	man
207	1	3	male	26.00	0	0	18.7875	C	Third	man
208	1	3	female	16.00	0	0	7.7500	Q	Third	woman
209	1	1	male	40.00	0	0	31.0000	C	First	man
210	0	3	male	24.00	0	0	7.0500	S	Third	man
211	1	2	female	35.00	0	0	21.0000	S	Second	woman
212	0	3	male	22.00	0	0	7.2500	S	Third	man
213	0	2	male	30.00	0	0	13.0000	S	Second	man
214	0	3	male	NaN	1	0	7.7500	Q	Third	man
215	1	1	female	31.00	1	0	113.2750	C	First	woman
216	1	3	female	27.00	0	0	7.9250	S	Third	woman
217	0	2	male	42.00	1	0	27.0000	S	Second	man
218	1	1	female	32.00	0	0	76.2917	C	First	woman
219	0	2	male	30.00	0	0	10.5000	S	Second	man
220	1	3	male	16.00	0	0	8.0500	S	Third	man
221	0	2	male	27.00	0	0	13.0000	S	Second	man
222	0	3	male	51.00	0	0	8.0500	S	Third	man
223	0	3	male	NaN	0	0	7.8958	S	Third	man
224	1	1	male	38.00	1	0	90.0000	S	First	man
225	0	3	male	22.00	0	0	9.3500	S	Third	man
226	1	2	male	19.00	0	0	10.5000	S	Second	man
227	0	3	male	20.50	0	0	7.2500	S	Third	man
228	0	2	male	18.00	0	0	13.0000	S	Second	man
229	0	3	female	NaN	3	1	25.4667	S	Third	woman
230	1	1	female	35.00	1	0	83.4750	S	First	woman
231	0	3	male	29.00	0	0	7.7750	S	Third	man
232	0	2	male	59.00	0	0	13.5000	S	Second	man

233	1	3	female	5.00	4	2	31.3875	S	Third	child
234	0	2	male	24.00	0	0	10.5000	S	Second	man
235	0	3	female	NaN	0	0	7.5500	S	Third	woman
236	0	2	male	44.00	1	0	26.0000	S	Second	man
237	1	2	female	8.00	0	2	26.2500	S	Second	child
238	0	2	male	19.00	0	0	10.5000	S	Second	man
239	0	2	male	33.00	0	0	12.2750	S	Second	man
240	0	3	female	NaN	1	0	14.4542	C	Third	woman
241	1	3	female	NaN	1	0	15.5000	Q	Third	woman
242	0	2	male	29.00	0	0	10.5000	S	Second	man
243	0	3	male	22.00	0	0	7.1250	S	Third	man
244	0	3	male	30.00	0	0	7.2250	C	Third	man
245	0	1	male	44.00	2	0	90.0000	Q	First	man
246	0	3	female	25.00	0	0	7.7750	S	Third	woman
247	1	2	female	24.00	0	2	14.5000	S	Second	woman
248	1	1	male	37.00	1	1	52.5542	S	First	man
249	0	2	male	54.00	1	0	26.0000	S	Second	man
250	0	3	male	NaN	0	0	7.2500	S	Third	man
251	0	3	female	29.00	1	1	10.4625	S	Third	woman
252	0	1	male	62.00	0	0	26.5500	S	First	man
253	0	3	male	30.00	1	0	16.1000	S	Third	man
254	0	3	female	41.00	0	2	20.2125	S	Third	woman
255	1	3	female	29.00	0	2	15.2458	C	Third	woman
256	1	1	female	NaN	0	0	79.2000	C	First	woman
257	1	1	female	30.00	0	0	86.5000	S	First	woman
258	1	1	female	35.00	0	0	512.3292	C	First	woman
259	1	2	female	50.00	0	1	26.0000	S	Second	woman
260	0	3	male	NaN	0	0	7.7500	Q	Third	man
261	1	3	male	3.00	4	2	31.3875	S	Third	child
262	0	1	male	52.00	1	1	79.6500	S	First	man
263	0	1	male	40.00	0	0	0.0000	S	First	man
264	0	3	female	NaN	0	0	7.7500	Q	Third	woman
265	0	2	male	36.00	0	0	10.5000	S	Second	man
266	0	3	male	16.00	4	1	39.6875	S	Third	man
267	1	3	male	25.00	1	0	7.7750	S	Third	man
268	1	1	female	58.00	0	1	153.4625	S	First	woman
269	1	1	female	35.00	0	0	135.6333	S	First	woman
270	0	1	male	NaN	0	0	31.0000	S	First	man
271	1	3	male	25.00	0	0	0.0000	S	Third	man

272	1	2	female	41.00	0	1	19.5000	S	Second	woman
273	0	1	male	37.00	0	1	29.7000	C	First	man
274	1	3	female	NaN	0	0	7.7500	Q	Third	woman
275	1	1	female	63.00	1	0	77.9583	S	First	woman
276	0	3	female	45.00	0	0	7.7500	S	Third	woman
277	0	2	male	NaN	0	0	0.0000	S	Second	man
278	0	3	male	7.00	4	1	29.1250	Q	Third	child
279	1	3	female	35.00	1	1	20.2500	S	Third	woman
280	0	3	male	65.00	0	0	7.7500	Q	Third	man
281	0	3	male	28.00	0	0	7.8542	S	Third	man
282	0	3	male	16.00	0	0	9.5000	S	Third	man
283	1	3	male	19.00	0	0	8.0500	S	Third	man
284	0	1	male	NaN	0	0	26.0000	S	First	man
285	0	3	male	33.00	0	0	8.6625	C	Third	man
286	1	3	male	30.00	0	0	9.5000	S	Third	man
287	0	3	male	22.00	0	0	7.8958	S	Third	man
288	1	2	male	42.00	0	0	13.0000	S	Second	man
289	1	3	female	22.00	0	0	7.7500	Q	Third	woman
290	1	1	female	26.00	0	0	78.8500	S	First	woman
291	1	1	female	19.00	1	0	91.0792	C	First	woman
292	0	2	male	36.00	0	0	12.8750	C	Second	man
293	0	3	female	24.00	0	0	8.8500	S	Third	woman
294	0	3	male	24.00	0	0	7.8958	S	Third	man
295	0	1	male	NaN	0	0	27.7208	C	First	man
296	0	3	male	23.50	0	0	7.2292	C	Third	man
297	0	1	female	2.00	1	2	151.5500	S	First	child
298	1	1	male	NaN	0	0	30.5000	S	First	man
299	1	1	female	50.00	0	1	247.5208	C	First	woman
300	1	3	female	NaN	0	0	7.7500	Q	Third	woman
301	1	3	male	NaN	2	0	23.2500	Q	Third	man
302	0	3	male	19.00	0	0	0.0000	S	Third	man
303	1	2	female	NaN	0	0	12.3500	Q	Second	woman
304	0	3	male	NaN	0	0	8.0500	S	Third	man
305	1	1	male	0.92	1	2	151.5500	S	First	child
306	1	1	female	NaN	0	0	110.8833	C	First	woman
307	1	1	female	17.00	1	0	108.9000	C	First	woman
308	0	2	male	30.00	1	0	24.0000	C	Second	man
309	1	1	female	30.00	0	0	56.9292	C	First	woman
310	1	1	female	24.00	0	0	83.1583	C	First	woman

311	1	1	female	18.00	2	2	262.3750	C	First	woman
312	0	2	female	26.00	1	1	26.0000	S	Second	woman
313	0	3	male	28.00	0	0	7.8958	S	Third	man
314	0	2	male	43.00	1	1	26.2500	S	Second	man
315	1	3	female	26.00	0	0	7.8542	S	Third	woman
316	1	2	female	24.00	1	0	26.0000	S	Second	woman
317	0	2	male	54.00	0	0	14.0000	S	Second	man
318	1	1	female	31.00	0	2	164.8667	S	First	woman
319	1	1	female	40.00	1	1	134.5000	C	First	woman
320	0	3	male	22.00	0	0	7.2500	S	Third	man
321	0	3	male	27.00	0	0	7.8958	S	Third	man
322	1	2	female	30.00	0	0	12.3500	Q	Second	woman
323	1	2	female	22.00	1	1	29.0000	S	Second	woman
324	0	3	male	NaN	8	2	69.5500	S	Third	man
325	1	1	female	36.00	0	0	135.6333	C	First	woman
326	0	3	male	61.00	0	0	6.2375	S	Third	man
327	1	2	female	36.00	0	0	13.0000	S	Second	woman
328	1	3	female	31.00	1	1	20.5250	S	Third	woman
329	1	1	female	16.00	0	1	57.9792	C	First	woman
330	1	3	female	NaN	2	0	23.2500	Q	Third	woman
331	0	1	male	45.50	0	0	28.5000	S	First	man
332	0	1	male	38.00	0	1	153.4625	S	First	man
333	0	3	male	16.00	2	0	18.0000	S	Third	man
334	1	1	female	NaN	1	0	133.6500	S	First	woman
335	0	3	male	NaN	0	0	7.8958	S	Third	man
336	0	1	male	29.00	1	0	66.6000	S	First	man
337	1	1	female	41.00	0	0	134.5000	C	First	woman
338	1	3	male	45.00	0	0	8.0500	S	Third	man
339	0	1	male	45.00	0	0	35.5000	S	First	man
340	1	2	male	2.00	1	1	26.0000	S	Second	child
341	1	1	female	24.00	3	2	263.0000	S	First	woman
342	0	2	male	28.00	0	0	13.0000	S	Second	man
343	0	2	male	25.00	0	0	13.0000	S	Second	man
344	0	2	male	36.00	0	0	13.0000	S	Second	man
345	1	2	female	24.00	0	0	13.0000	S	Second	woman
346	1	2	female	40.00	0	0	13.0000	S	Second	woman
347	1	3	female	NaN	1	0	16.1000	S	Third	woman
348	1	3	male	3.00	1	1	15.9000	S	Third	child
349	0	3	male	42.00	0	0	8.6625	S	Third	man

350	0	3	male	23.00	0	0	9.2250	S	Third	man
351	0	1	male	NaN	0	0	35.0000	S	First	man
352	0	3	male	15.00	1	1	7.2292	C	Third	child
353	0	3	male	25.00	1	0	17.8000	S	Third	man
354	0	3	male	NaN	0	0	7.2250	C	Third	man
355	0	3	male	28.00	0	0	9.5000	S	Third	man
356	1	1	female	22.00	0	1	55.0000	S	First	woman
357	0	2	female	38.00	0	0	13.0000	S	Second	woman
358	1	3	female	NaN	0	0	7.8792	Q	Third	woman
359	1	3	female	NaN	0	0	7.8792	Q	Third	woman
360	0	3	male	40.00	1	4	27.9000	S	Third	man
361	0	2	male	29.00	1	0	27.7208	C	Second	man
362	0	3	female	45.00	0	1	14.4542	C	Third	woman
363	0	3	male	35.00	0	0	7.0500	S	Third	man
364	0	3	male	NaN	1	0	15.5000	Q	Third	man
365	0	3	male	30.00	0	0	7.2500	S	Third	man
366	1	1	female	60.00	1	0	75.2500	C	First	woman
367	1	3	female	NaN	0	0	7.2292	C	Third	woman
368	1	3	female	NaN	0	0	7.7500	Q	Third	woman
369	1	1	female	24.00	0	0	69.3000	C	First	woman
370	1	1	male	25.00	1	0	55.4417	C	First	man
371	0	3	male	18.00	1	0	6.4958	S	Third	man
372	0	3	male	19.00	0	0	8.0500	S	Third	man
373	0	1	male	22.00	0	0	135.6333	C	First	man
374	0	3	female	3.00	3	1	21.0750	S	Third	child
375	1	1	female	NaN	1	0	82.1708	C	First	woman
376	1	3	female	22.00	0	0	7.2500	S	Third	woman
377	0	1	male	27.00	0	2	211.5000	C	First	man
378	0	3	male	20.00	0	0	4.0125	C	Third	man
379	0	3	male	19.00	0	0	7.7750	S	Third	man
380	1	1	female	42.00	0	0	227.5250	C	First	woman
381	1	3	female	1.00	0	2	15.7417	C	Third	child
382	0	3	male	32.00	0	0	7.9250	S	Third	man
383	1	1	female	35.00	1	0	52.0000	S	First	woman
384	0	3	male	NaN	0	0	7.8958	S	Third	man
385	0	2	male	18.00	0	0	73.5000	S	Second	man
386	0	3	male	1.00	5	2	46.9000	S	Third	child
387	1	2	female	36.00	0	0	13.0000	S	Second	woman
388	0	3	male	NaN	0	0	7.7292	Q	Third	man

389	1	2	female	17.00	0	0	12.0000	C	Second	woman
390	1	1	male	36.00	1	2	120.0000	S	First	man
391	1	3	male	21.00	0	0	7.7958	S	Third	man
392	0	3	male	28.00	2	0	7.9250	S	Third	man
393	1	1	female	23.00	1	0	113.2750	C	First	woman
394	1	3	female	24.00	0	2	16.7000	S	Third	woman
395	0	3	male	22.00	0	0	7.7958	S	Third	man
396	0	3	female	31.00	0	0	7.8542	S	Third	woman
397	0	2	male	46.00	0	0	26.0000	S	Second	man
398	0	2	male	23.00	0	0	10.5000	S	Second	man
399	1	2	female	28.00	0	0	12.6500	S	Second	woman
400	1	3	male	39.00	0	0	7.9250	S	Third	man
401	0	3	male	26.00	0	0	8.0500	S	Third	man
402	0	3	female	21.00	1	0	9.8250	S	Third	woman
403	0	3	male	28.00	1	0	15.8500	S	Third	man
404	0	3	female	20.00	0	0	8.6625	S	Third	woman
405	0	2	male	34.00	1	0	21.0000	S	Second	man
406	0	3	male	51.00	0	0	7.7500	S	Third	man
407	1	2	male	3.00	1	1	18.7500	S	Second	child
408	0	3	male	21.00	0	0	7.7750	S	Third	man
409	0	3	female	NaN	3	1	25.4667	S	Third	woman
410	0	3	male	NaN	0	0	7.8958	S	Third	man
411	0	3	male	NaN	0	0	6.8583	Q	Third	man
412	1	1	female	33.00	1	0	90.0000	Q	First	woman
413	0	2	male	NaN	0	0	0.0000	S	Second	man
414	1	3	male	44.00	0	0	7.9250	S	Third	man
415	0	3	female	NaN	0	0	8.0500	S	Third	woman
416	1	2	female	34.00	1	1	32.5000	S	Second	woman
417	1	2	female	18.00	0	2	13.0000	S	Second	woman
418	0	2	male	30.00	0	0	13.0000	S	Second	man
419	0	3	female	10.00	0	2	24.1500	S	Third	child
420	0	3	male	NaN	0	0	7.8958	C	Third	man
421	0	3	male	21.00	0	0	7.7333	Q	Third	man
422	0	3	male	29.00	0	0	7.8750	S	Third	man
423	0	3	female	28.00	1	1	14.4000	S	Third	woman
424	0	3	male	18.00	1	1	20.2125	S	Third	man
425	0	3	male	NaN	0	0	7.2500	S	Third	man
426	1	2	female	28.00	1	0	26.0000	S	Second	woman
427	1	2	female	19.00	0	0	26.0000	S	Second	woman

428	0	3	male	NaN	0	0	7.7500	Q	Third	man
429	1	3	male	32.00	0	0	8.0500	S	Third	man
430	1	1	male	28.00	0	0	26.5500	S	First	man
431	1	3	female	NaN	1	0	16.1000	S	Third	woman
432	1	2	female	42.00	1	0	26.0000	S	Second	woman
433	0	3	male	17.00	0	0	7.1250	S	Third	man
434	0	1	male	50.00	1	0	55.9000	S	First	man
435	1	1	female	14.00	1	2	120.0000	S	First	child
436	0	3	female	21.00	2	2	34.3750	S	Third	woman
437	1	2	female	24.00	2	3	18.7500	S	Second	woman
438	0	1	male	64.00	1	4	263.0000	S	First	man
439	0	2	male	31.00	0	0	10.5000	S	Second	man
440	1	2	female	45.00	1	1	26.2500	S	Second	woman
441	0	3	male	20.00	0	0	9.5000	S	Third	man
442	0	3	male	25.00	1	0	7.7750	S	Third	man
443	1	2	female	28.00	0	0	13.0000	S	Second	woman
444	1	3	male	NaN	0	0	8.1125	S	Third	man
445	1	1	male	4.00	0	2	81.8583	S	First	child
446	1	2	female	13.00	0	1	19.5000	S	Second	child
447	1	1	male	34.00	0	0	26.5500	S	First	man
448	1	3	female	5.00	2	1	19.2583	C	Third	child
449	1	1	male	52.00	0	0	30.5000	S	First	man
450	0	2	male	36.00	1	2	27.7500	S	Second	man
451	0	3	male	NaN	1	0	19.9667	S	Third	man
452	0	1	male	30.00	0	0	27.7500	C	First	man
453	1	1	male	49.00	1	0	89.1042	C	First	man
454	0	3	male	NaN	0	0	8.0500	S	Third	man
455	1	3	male	29.00	0	0	7.8958	C	Third	man
456	0	1	male	65.00	0	0	26.5500	S	First	man
457	1	1	female	NaN	1	0	51.8625	S	First	woman
458	1	2	female	50.00	0	0	10.5000	S	Second	woman
459	0	3	male	NaN	0	0	7.7500	Q	Third	man
460	1	1	male	48.00	0	0	26.5500	S	First	man
461	0	3	male	34.00	0	0	8.0500	S	Third	man
462	0	1	male	47.00	0	0	38.5000	S	First	man
463	0	2	male	48.00	0	0	13.0000	S	Second	man
464	0	3	male	NaN	0	0	8.0500	S	Third	man
465	0	3	male	38.00	0	0	7.0500	S	Third	man
466	0	2	male	NaN	0	0	0.0000	S	Second	man

467	0	1	male	56.00	0	0	26.5500	S	First	man
468	0	3	male	NaN	0	0	7.7250	Q	Third	man
469	1	3	female	0.75	2	1	19.2583	C	Third	child
470	0	3	male	NaN	0	0	7.2500	S	Third	man
471	0	3	male	38.00	0	0	8.6625	S	Third	man
472	1	2	female	33.00	1	2	27.7500	S	Second	woman
473	1	2	female	23.00	0	0	13.7917	C	Second	woman
474	0	3	female	22.00	0	0	9.8375	S	Third	woman
475	0	1	male	NaN	0	0	52.0000	S	First	man
476	0	2	male	34.00	1	0	21.0000	S	Second	man
477	0	3	male	29.00	1	0	7.0458	S	Third	man
478	0	3	male	22.00	0	0	7.5208	S	Third	man
479	1	3	female	2.00	0	1	12.2875	S	Third	child
480	0	3	male	9.00	5	2	46.9000	S	Third	child
481	0	2	male	NaN	0	0	0.0000	S	Second	man
482	0	3	male	50.00	0	0	8.0500	S	Third	man
483	1	3	female	63.00	0	0	9.5875	S	Third	woman
484	1	1	male	25.00	1	0	91.0792	C	First	man
485	0	3	female	NaN	3	1	25.4667	S	Third	woman
486	1	1	female	35.00	1	0	90.0000	S	First	woman
487	0	1	male	58.00	0	0	29.7000	C	First	man
488	0	3	male	30.00	0	0	8.0500	S	Third	man
489	1	3	male	9.00	1	1	15.9000	S	Third	child
490	0	3	male	NaN	1	0	19.9667	S	Third	man
491	0	3	male	21.00	0	0	7.2500	S	Third	man
492	0	1	male	55.00	0	0	30.5000	S	First	man
493	0	1	male	71.00	0	0	49.5042	C	First	man
494	0	3	male	21.00	0	0	8.0500	S	Third	man
495	0	3	male	NaN	0	0	14.4583	C	Third	man
496	1	1	female	54.00	1	0	78.2667	C	First	woman
497	0	3	male	NaN	0	0	15.1000	S	Third	man
498	0	1	female	25.00	1	2	151.5500	S	First	woman
499	0	3	male	24.00	0	0	7.7958	S	Third	man
500	0	3	male	17.00	0	0	8.6625	S	Third	man
501	0	3	female	21.00	0	0	7.7500	Q	Third	woman
502	0	3	female	NaN	0	0	7.6292	Q	Third	woman
503	0	3	female	37.00	0	0	9.5875	S	Third	woman
504	1	1	female	16.00	0	0	86.5000	S	First	woman
505	0	1	male	18.00	1	0	108.9000	C	First	man

506	1	2	female	33.00	0	2	26.0000	S	Second	woman
507	1	1	male	NaN	0	0	26.5500	S	First	man
508	0	3	male	28.00	0	0	22.5250	S	Third	man
509	1	3	male	26.00	0	0	56.4958	S	Third	man
510	1	3	male	29.00	0	0	7.7500	Q	Third	man
511	0	3	male	NaN	0	0	8.0500	S	Third	man
512	1	1	male	36.00	0	0	26.2875	S	First	man
513	1	1	female	54.00	1	0	59.4000	C	First	woman
514	0	3	male	24.00	0	0	7.4958	S	Third	man
515	0	1	male	47.00	0	0	34.0208	S	First	man
516	1	2	female	34.00	0	0	10.5000	S	Second	woman
517	0	3	male	NaN	0	0	24.1500	Q	Third	man
518	1	2	female	36.00	1	0	26.0000	S	Second	woman
519	0	3	male	32.00	0	0	7.8958	S	Third	man
520	1	1	female	30.00	0	0	93.5000	S	First	woman
521	0	3	male	22.00	0	0	7.8958	S	Third	man
522	0	3	male	NaN	0	0	7.2250	C	Third	man
523	1	1	female	44.00	0	1	57.9792	C	First	woman
524	0	3	male	NaN	0	0	7.2292	C	Third	man
525	0	3	male	40.50	0	0	7.7500	Q	Third	man
526	1	2	female	50.00	0	0	10.5000	S	Second	woman
527	0	1	male	NaN	0	0	221.7792	S	First	man
528	0	3	male	39.00	0	0	7.9250	S	Third	man
529	0	2	male	23.00	2	1	11.5000	S	Second	man
530	1	2	female	2.00	1	1	26.0000	S	Second	child
531	0	3	male	NaN	0	0	7.2292	C	Third	man
532	0	3	male	17.00	1	1	7.2292	C	Third	man
533	1	3	female	NaN	0	2	22.3583	C	Third	woman
534	0	3	female	30.00	0	0	8.6625	S	Third	woman
535	1	2	female	7.00	0	2	26.2500	S	Second	child
536	0	1	male	45.00	0	0	26.5500	S	First	man
537	1	1	female	30.00	0	0	106.4250	C	First	woman
538	0	3	male	NaN	0	0	14.5000	S	Third	man
539	1	1	female	22.00	0	2	49.5000	C	First	woman
540	1	1	female	36.00	0	2	71.0000	S	First	woman
541	0	3	female	9.00	4	2	31.2750	S	Third	child
542	0	3	female	11.00	4	2	31.2750	S	Third	child
543	1	2	male	32.00	1	0	26.0000	S	Second	man
544	0	1	male	50.00	1	0	106.4250	C	First	man

545	0	1	male	64.00	0	0	26.0000	S	First	man
546	1	2	female	19.00	1	0	26.0000	S	Second	woman
547	1	2	male	NaN	0	0	13.8625	C	Second	man
548	0	3	male	33.00	1	1	20.5250	S	Third	man
549	1	2	male	8.00	1	1	36.7500	S	Second	child
550	1	1	male	17.00	0	2	110.8833	C	First	man
551	0	2	male	27.00	0	0	26.0000	S	Second	man
552	0	3	male	NaN	0	0	7.8292	Q	Third	man
553	1	3	male	22.00	0	0	7.2250	C	Third	man
554	1	3	female	22.00	0	0	7.7750	S	Third	woman
555	0	1	male	62.00	0	0	26.5500	S	First	man
556	1	1	female	48.00	1	0	39.6000	C	First	woman
557	0	1	male	NaN	0	0	227.5250	C	First	man
558	1	1	female	39.00	1	1	79.6500	S	First	woman
559	1	3	female	36.00	1	0	17.4000	S	Third	woman
560	0	3	male	NaN	0	0	7.7500	Q	Third	man
561	0	3	male	40.00	0	0	7.8958	S	Third	man
562	0	2	male	28.00	0	0	13.5000	S	Second	man
563	0	3	male	NaN	0	0	8.0500	S	Third	man
564	0	3	female	NaN	0	0	8.0500	S	Third	woman
565	0	3	male	24.00	2	0	24.1500	S	Third	man
566	0	3	male	19.00	0	0	7.8958	S	Third	man
567	0	3	female	29.00	0	4	21.0750	S	Third	woman
568	0	3	male	NaN	0	0	7.2292	C	Third	man
569	1	3	male	32.00	0	0	7.8542	S	Third	man
570	1	2	male	62.00	0	0	10.5000	S	Second	man
571	1	1	female	53.00	2	0	51.4792	S	First	woman
572	1	1	male	36.00	0	0	26.3875	S	First	man
573	1	3	female	NaN	0	0	7.7500	Q	Third	woman
574	0	3	male	16.00	0	0	8.0500	S	Third	man
575	0	3	male	19.00	0	0	14.5000	S	Third	man
576	1	2	female	34.00	0	0	13.0000	S	Second	woman
577	1	1	female	39.00	1	0	55.9000	S	First	woman
578	0	3	female	NaN	1	0	14.4583	C	Third	woman
579	1	3	male	32.00	0	0	7.9250	S	Third	man
580	1	2	female	25.00	1	1	30.0000	S	Second	woman
581	1	1	female	39.00	1	1	110.8833	C	First	woman
582	0	2	male	54.00	0	0	26.0000	S	Second	man
583	0	1	male	36.00	0	0	40.1250	C	First	man

584	0	3	male	NaN	0	0	8.7125	C	Third	man
585	1	1	female	18.00	0	2	79.6500	S	First	woman
586	0	2	male	47.00	0	0	15.0000	S	Second	man
587	1	1	male	60.00	1	1	79.2000	C	First	man
588	0	3	male	22.00	0	0	8.0500	S	Third	man
589	0	3	male	NaN	0	0	8.0500	S	Third	man
590	0	3	male	35.00	0	0	7.1250	S	Third	man
591	1	1	female	52.00	1	0	78.2667	C	First	woman
592	0	3	male	47.00	0	0	7.2500	S	Third	man
593	0	3	female	NaN	0	2	7.7500	Q	Third	woman
594	0	2	male	37.00	1	0	26.0000	S	Second	man
595	0	3	male	36.00	1	1	24.1500	S	Third	man
596	1	2	female	NaN	0	0	33.0000	S	Second	woman
597	0	3	male	49.00	0	0	0.0000	S	Third	man
598	0	3	male	NaN	0	0	7.2250	C	Third	man
599	1	1	male	49.00	1	0	56.9292	C	First	man
600	1	2	female	24.00	2	1	27.0000	S	Second	woman
601	0	3	male	NaN	0	0	7.8958	S	Third	man
602	0	1	male	NaN	0	0	42.4000	S	First	man
603	0	3	male	44.00	0	0	8.0500	S	Third	man
604	1	1	male	35.00	0	0	26.5500	C	First	man
605	0	3	male	36.00	1	0	15.5500	S	Third	man
606	0	3	male	30.00	0	0	7.8958	S	Third	man
607	1	1	male	27.00	0	0	30.5000	S	First	man
608	1	2	female	22.00	1	2	41.5792	C	Second	woman
609	1	1	female	40.00	0	0	153.4625	S	First	woman
610	0	3	female	39.00	1	5	31.2750	S	Third	woman
611	0	3	male	NaN	0	0	7.0500	S	Third	man
612	1	3	female	NaN	1	0	15.5000	Q	Third	woman
613	0	3	male	NaN	0	0	7.7500	Q	Third	man
614	0	3	male	35.00	0	0	8.0500	S	Third	man
615	1	2	female	24.00	1	2	65.0000	S	Second	woman
616	0	3	male	34.00	1	1	14.4000	S	Third	man
617	0	3	female	26.00	1	0	16.1000	S	Third	woman
618	1	2	female	4.00	2	1	39.0000	S	Second	child
619	0	2	male	26.00	0	0	10.5000	S	Second	man
620	0	3	male	27.00	1	0	14.4542	C	Third	man
621	1	1	male	42.00	1	0	52.5542	S	First	man
622	1	3	male	20.00	1	1	15.7417	C	Third	man

623	0	3	male	21.00	0	0	7.8542	S	Third	man
624	0	3	male	21.00	0	0	16.1000	S	Third	man
625	0	1	male	61.00	0	0	32.3208	S	First	man
626	0	2	male	57.00	0	0	12.3500	Q	Second	man
627	1	1	female	21.00	0	0	77.9583	S	First	woman
628	0	3	male	26.00	0	0	7.8958	S	Third	man
629	0	3	male	Nan	0	0	7.7333	Q	Third	man
630	1	1	male	80.00	0	0	30.0000	S	First	man
631	0	3	male	51.00	0	0	7.0542	S	Third	man
632	1	1	male	32.00	0	0	30.5000	C	First	man
633	0	1	male	Nan	0	0	0.0000	S	First	man
634	0	3	female	9.00	3	2	27.9000	S	Third	child
635	1	2	female	28.00	0	0	13.0000	S	Second	woman
636	0	3	male	32.00	0	0	7.9250	S	Third	man
637	0	2	male	31.00	1	1	26.2500	S	Second	man
638	0	3	female	41.00	0	5	39.6875	S	Third	woman
639	0	3	male	Nan	1	0	16.1000	S	Third	man
640	0	3	male	20.00	0	0	7.8542	S	Third	man
641	1	1	female	24.00	0	0	69.3000	C	First	woman
642	0	3	female	2.00	3	2	27.9000	S	Third	child
643	1	3	male	Nan	0	0	56.4958	S	Third	man
644	1	3	female	0.75	2	1	19.2583	C	Third	child
645	1	1	male	48.00	1	0	76.7292	C	First	man
646	0	3	male	19.00	0	0	7.8958	S	Third	man
647	1	1	male	56.00	0	0	35.5000	C	First	man
648	0	3	male	Nan	0	0	7.5500	S	Third	man
649	1	3	female	23.00	0	0	7.5500	S	Third	woman
650	0	3	male	Nan	0	0	7.8958	S	Third	man
651	1	2	female	18.00	0	1	23.0000	S	Second	woman
652	0	3	male	21.00	0	0	8.4333	S	Third	man
653	1	3	female	Nan	0	0	7.8292	Q	Third	woman
654	0	3	female	18.00	0	0	6.7500	Q	Third	woman
655	0	2	male	24.00	2	0	73.5000	S	Second	man
656	0	3	male	Nan	0	0	7.8958	S	Third	man
657	0	3	female	32.00	1	1	15.5000	Q	Third	woman
658	0	2	male	23.00	0	0	13.0000	S	Second	man
659	0	1	male	58.00	0	2	113.2750	C	First	man
660	1	1	male	50.00	2	0	133.6500	S	First	man
661	0	3	male	40.00	0	0	7.2250	C	Third	man

662	0	1	male	47.00	0	0	25.5875	S	First	man
663	0	3	male	36.00	0	0	7.4958	S	Third	man
664	1	3	male	20.00	1	0	7.9250	S	Third	man
665	0	2	male	32.00	2	0	73.5000	S	Second	man
666	0	2	male	25.00	0	0	13.0000	S	Second	man
667	0	3	male	NaN	0	0	7.7750	S	Third	man
668	0	3	male	43.00	0	0	8.0500	S	Third	man
669	1	1	female	NaN	1	0	52.0000	S	First	woman
670	1	2	female	40.00	1	1	39.0000	S	Second	woman
671	0	1	male	31.00	1	0	52.0000	S	First	man
672	0	2	male	70.00	0	0	10.5000	S	Second	man
673	1	2	male	31.00	0	0	13.0000	S	Second	man
674	0	2	male	NaN	0	0	0.0000	S	Second	man
675	0	3	male	18.00	0	0	7.7750	S	Third	man
676	0	3	male	24.50	0	0	8.0500	S	Third	man
677	1	3	female	18.00	0	0	9.8417	S	Third	woman
678	0	3	female	43.00	1	6	46.9000	S	Third	woman
679	1	1	male	36.00	0	1	512.3292	C	First	man
680	0	3	female	NaN	0	0	8.1375	Q	Third	woman
681	1	1	male	27.00	0	0	76.7292	C	First	man
682	0	3	male	20.00	0	0	9.2250	S	Third	man
683	0	3	male	14.00	5	2	46.9000	S	Third	child
684	0	2	male	60.00	1	1	39.0000	S	Second	man
685	0	2	male	25.00	1	2	41.5792	C	Second	man
686	0	3	male	14.00	4	1	39.6875	S	Third	child
687	0	3	male	19.00	0	0	10.1708	S	Third	man
688	0	3	male	18.00	0	0	7.7958	S	Third	man
689	1	1	female	15.00	0	1	211.3375	S	First	child
690	1	1	male	31.00	1	0	57.0000	S	First	man
691	1	3	female	4.00	0	1	13.4167	C	Third	child
692	1	3	male	NaN	0	0	56.4958	S	Third	man
693	0	3	male	25.00	0	0	7.2250	C	Third	man
694	0	1	male	60.00	0	0	26.5500	S	First	man
695	0	2	male	52.00	0	0	13.5000	S	Second	man
696	0	3	male	44.00	0	0	8.0500	S	Third	man
697	1	3	female	NaN	0	0	7.7333	Q	Third	woman
698	0	1	male	49.00	1	1	110.8833	C	First	man
699	0	3	male	42.00	0	0	7.6500	S	Third	man
700	1	1	female	18.00	1	0	227.5250	C	First	woman

701	1	1	male	35.00	0	0	26.2875	S	First	man
702	0	3	female	18.00	0	1	14.4542	C	Third	woman
703	0	3	male	25.00	0	0	7.7417	Q	Third	man
704	0	3	male	26.00	1	0	7.8542	S	Third	man
705	0	2	male	39.00	0	0	26.0000	S	Second	man
706	1	2	female	45.00	0	0	13.5000	S	Second	woman
707	1	1	male	42.00	0	0	26.2875	S	First	man
708	1	1	female	22.00	0	0	151.5500	S	First	woman
709	1	3	male	NaN	1	1	15.2458	C	Third	man
710	1	1	female	24.00	0	0	49.5042	C	First	woman
711	0	1	male	NaN	0	0	26.5500	S	First	man
712	1	1	male	48.00	1	0	52.0000	S	First	man
713	0	3	male	29.00	0	0	9.4833	S	Third	man
714	0	2	male	52.00	0	0	13.0000	S	Second	man
715	0	3	male	19.00	0	0	7.6500	S	Third	man
716	1	1	female	38.00	0	0	227.5250	C	First	woman
717	1	2	female	27.00	0	0	10.5000	S	Second	woman
718	0	3	male	NaN	0	0	15.5000	Q	Third	man
719	0	3	male	33.00	0	0	7.7750	S	Third	man
720	1	2	female	6.00	0	1	33.0000	S	Second	child
721	0	3	male	17.00	1	0	7.0542	S	Third	man
722	0	2	male	34.00	0	0	13.0000	S	Second	man
723	0	2	male	50.00	0	0	13.0000	S	Second	man
724	1	1	male	27.00	1	0	53.1000	S	First	man
725	0	3	male	20.00	0	0	8.6625	S	Third	man
726	1	2	female	30.00	3	0	21.0000	S	Second	woman
727	1	3	female	NaN	0	0	7.7375	Q	Third	woman
728	0	2	male	25.00	1	0	26.0000	S	Second	man
729	0	3	female	25.00	1	0	7.9250	S	Third	woman
730	1	1	female	29.00	0	0	211.3375	S	First	woman
731	0	3	male	11.00	0	0	18.7875	C	Third	child
732	0	2	male	NaN	0	0	0.0000	S	Second	man
733	0	2	male	23.00	0	0	13.0000	S	Second	man
734	0	2	male	23.00	0	0	13.0000	S	Second	man
735	0	3	male	28.50	0	0	16.1000	S	Third	man
736	0	3	female	48.00	1	3	34.3750	S	Third	woman
737	1	1	male	35.00	0	0	512.3292	C	First	man
738	0	3	male	NaN	0	0	7.8958	S	Third	man
739	0	3	male	NaN	0	0	7.8958	S	Third	man

740	1	1	male	NaN	0	0	30.0000	S	First	man
741	0	1	male	36.00	1	0	78.8500	S	First	man
742	1	1	female	21.00	2	2	262.3750	C	First	woman
743	0	3	male	24.00	1	0	16.1000	S	Third	man
744	1	3	male	31.00	0	0	7.9250	S	Third	man
745	0	1	male	70.00	1	1	71.0000	S	First	man
746	0	3	male	16.00	1	1	20.2500	S	Third	man
747	1	2	female	30.00	0	0	13.0000	S	Second	woman
748	0	1	male	19.00	1	0	53.1000	S	First	man
749	0	3	male	31.00	0	0	7.7500	Q	Third	man
750	1	2	female	4.00	1	1	23.0000	S	Second	child
751	1	3	male	6.00	0	1	12.4750	S	Third	child
752	0	3	male	33.00	0	0	9.5000	S	Third	man
753	0	3	male	23.00	0	0	7.8958	S	Third	man
754	1	2	female	48.00	1	2	65.0000	S	Second	woman
755	1	2	male	0.67	1	1	14.5000	S	Second	child
756	0	3	male	28.00	0	0	7.7958	S	Third	man
757	0	2	male	18.00	0	0	11.5000	S	Second	man
758	0	3	male	34.00	0	0	8.0500	S	Third	man
759	1	1	female	33.00	0	0	86.5000	S	First	woman
760	0	3	male	NaN	0	0	14.5000	S	Third	man
761	0	3	male	41.00	0	0	7.1250	S	Third	man
762	1	3	male	20.00	0	0	7.2292	C	Third	man
763	1	1	female	36.00	1	2	120.0000	S	First	woman
764	0	3	male	16.00	0	0	7.7750	S	Third	man
765	1	1	female	51.00	1	0	77.9583	S	First	woman
766	0	1	male	NaN	0	0	39.6000	C	First	man
767	0	3	female	30.50	0	0	7.7500	Q	Third	woman
768	0	3	male	NaN	1	0	24.1500	Q	Third	man
769	0	3	male	32.00	0	0	8.3625	S	Third	man
770	0	3	male	24.00	0	0	9.5000	S	Third	man
771	0	3	male	48.00	0	0	7.8542	S	Third	man
772	0	2	female	57.00	0	0	10.5000	S	Second	woman
773	0	3	male	NaN	0	0	7.2250	C	Third	man
774	1	2	female	54.00	1	3	23.0000	S	Second	woman
775	0	3	male	18.00	0	0	7.7500	S	Third	man
776	0	3	male	NaN	0	0	7.7500	Q	Third	man
777	1	3	female	5.00	0	0	12.4750	S	Third	child
778	0	3	male	NaN	0	0	7.7375	Q	Third	man

779	1	1	female	43.00	0	1	211.3375	S	First	woman
780	1	3	female	13.00	0	0	7.2292	C	Third	child
781	1	1	female	17.00	1	0	57.0000	S	First	woman
782	0	1	male	29.00	0	0	30.0000	S	First	man
783	0	3	male	NaN	1	2	23.4500	S	Third	man
784	0	3	male	25.00	0	0	7.0500	S	Third	man
785	0	3	male	25.00	0	0	7.2500	S	Third	man
786	1	3	female	18.00	0	0	7.4958	S	Third	woman
787	0	3	male	8.00	4	1	29.1250	Q	Third	child
788	1	3	male	1.00	1	2	20.5750	S	Third	child
789	0	1	male	46.00	0	0	79.2000	C	First	man
790	0	3	male	NaN	0	0	7.7500	Q	Third	man
791	0	2	male	16.00	0	0	26.0000	S	Second	man
792	0	3	female	NaN	8	2	69.5500	S	Third	woman
793	0	1	male	NaN	0	0	30.6958	C	First	man
794	0	3	male	25.00	0	0	7.8958	S	Third	man
795	0	2	male	39.00	0	0	13.0000	S	Second	man
796	1	1	female	49.00	0	0	25.9292	S	First	woman
797	1	3	female	31.00	0	0	8.6833	S	Third	woman
798	0	3	male	30.00	0	0	7.2292	C	Third	man
799	0	3	female	30.00	1	1	24.1500	S	Third	woman
800	0	2	male	34.00	0	0	13.0000	S	Second	man
801	1	2	female	31.00	1	1	26.2500	S	Second	woman
802	1	1	male	11.00	1	2	120.0000	S	First	child
803	1	3	male	0.42	0	1	8.5167	C	Third	child
804	1	3	male	27.00	0	0	6.9750	S	Third	man
805	0	3	male	31.00	0	0	7.7750	S	Third	man
806	0	1	male	39.00	0	0	0.0000	S	First	man
807	0	3	female	18.00	0	0	7.7750	S	Third	woman
808	0	2	male	39.00	0	0	13.0000	S	Second	man
809	1	1	female	33.00	1	0	53.1000	S	First	woman
810	0	3	male	26.00	0	0	7.8875	S	Third	man
811	0	3	male	39.00	0	0	24.1500	S	Third	man
812	0	2	male	35.00	0	0	10.5000	S	Second	man
813	0	3	female	6.00	4	2	31.2750	S	Third	child
814	0	3	male	30.50	0	0	8.0500	S	Third	man
815	0	1	male	NaN	0	0	0.0000	S	First	man
816	0	3	female	23.00	0	0	7.9250	S	Third	woman
817	0	2	male	31.00	1	1	37.0042	C	Second	man

818	0	3	male	43.00	0	0	6.4500	S	Third	man
819	0	3	male	10.00	3	2	27.9000	S	Third	child
820	1	1	female	52.00	1	1	93.5000	S	First	woman
821	1	3	male	27.00	0	0	8.6625	S	Third	man
822	0	1	male	38.00	0	0	0.0000	S	First	man
823	1	3	female	27.00	0	1	12.4750	S	Third	woman
824	0	3	male	2.00	4	1	39.6875	S	Third	child
825	0	3	male	NaN	0	0	6.9500	Q	Third	man
826	0	3	male	NaN	0	0	56.4958	S	Third	man
827	1	2	male	1.00	0	2	37.0042	C	Second	child
828	1	3	male	NaN	0	0	7.7500	Q	Third	man
829	1	1	female	62.00	0	0	80.0000	NaN	First	woman
830	1	3	female	15.00	1	0	14.4542	C	Third	child
831	1	2	male	0.83	1	1	18.7500	S	Second	child
832	0	3	male	NaN	0	0	7.2292	C	Third	man
833	0	3	male	23.00	0	0	7.8542	S	Third	man
834	0	3	male	18.00	0	0	8.3000	S	Third	man
835	1	1	female	39.00	1	1	83.1583	C	First	woman
836	0	3	male	21.00	0	0	8.6625	S	Third	man
837	0	3	male	NaN	0	0	8.0500	S	Third	man
838	1	3	male	32.00	0	0	56.4958	S	Third	man
839	1	1	male	NaN	0	0	29.7000	C	First	man
840	0	3	male	20.00	0	0	7.9250	S	Third	man
841	0	2	male	16.00	0	0	10.5000	S	Second	man
842	1	1	female	30.00	0	0	31.0000	C	First	woman
843	0	3	male	34.50	0	0	6.4375	C	Third	man
844	0	3	male	17.00	0	0	8.6625	S	Third	man
845	0	3	male	42.00	0	0	7.5500	S	Third	man
846	0	3	male	NaN	8	2	69.5500	S	Third	man
847	0	3	male	35.00	0	0	7.8958	C	Third	man
848	0	2	male	28.00	0	1	33.0000	S	Second	man
849	1	1	female	NaN	1	0	89.1042	C	First	woman
850	0	3	male	4.00	4	2	31.2750	S	Third	child
851	0	3	male	74.00	0	0	7.7750	S	Third	man
852	0	3	female	9.00	1	1	15.2458	C	Third	child
853	1	1	female	16.00	0	1	39.4000	S	First	woman
854	0	2	female	44.00	1	0	26.0000	S	Second	woman
855	1	3	female	18.00	0	1	9.3500	S	Third	woman
856	1	1	female	45.00	1	1	164.8667	S	First	woman

857	1	1	male	51.00	0	0	26.5500	S	First	man
858	1	3	female	24.00	0	3	19.2583	C	Third	woman
859	0	3	male	NaN	0	0	7.2292	C	Third	man
860	0	3	male	41.00	2	0	14.1083	S	Third	man
861	0	2	male	21.00	1	0	11.5000	S	Second	man
862	1	1	female	48.00	0	0	25.9292	S	First	woman
863	0	3	female	NaN	8	2	69.5500	S	Third	woman
864	0	2	male	24.00	0	0	13.0000	S	Second	man
865	1	2	female	42.00	0	0	13.0000	S	Second	woman
866	1	2	female	27.00	1	0	13.8583	C	Second	woman
867	0	1	male	31.00	0	0	50.4958	S	First	man
868	0	3	male	NaN	0	0	9.5000	S	Third	man
869	1	3	male	4.00	1	1	11.1333	S	Third	child
870	0	3	male	26.00	0	0	7.8958	S	Third	man
871	1	1	female	47.00	1	1	52.5542	S	First	woman
872	0	1	male	33.00	0	0	5.0000	S	First	man
873	0	3	male	47.00	0	0	9.0000	S	Third	man
874	1	2	female	28.00	1	0	24.0000	C	Second	woman
875	1	3	female	15.00	0	0	7.2250	C	Third	child
876	0	3	male	20.00	0	0	9.8458	S	Third	man
877	0	3	male	19.00	0	0	7.8958	S	Third	man
878	0	3	male	NaN	0	0	7.8958	S	Third	man
879	1	1	female	56.00	0	1	83.1583	C	First	woman
880	1	2	female	25.00	0	1	26.0000	S	Second	woman
881	0	3	male	33.00	0	0	7.8958	S	Third	man
882	0	3	female	22.00	0	0	10.5167	S	Third	woman
883	0	2	male	28.00	0	0	10.5000	S	Second	man
884	0	3	male	25.00	0	0	7.0500	S	Third	man
885	0	3	female	39.00	0	5	29.1250	Q	Third	woman
886	0	2	male	27.00	0	0	13.0000	S	Second	man
887	1	1	female	19.00	0	0	30.0000	S	First	woman
888	0	3	female	NaN	1	2	23.4500	S	Third	woman
889	1	1	male	26.00	0	0	30.0000	C	First	man
890	0	3	male	32.00	0	0	7.7500	Q	Third	man

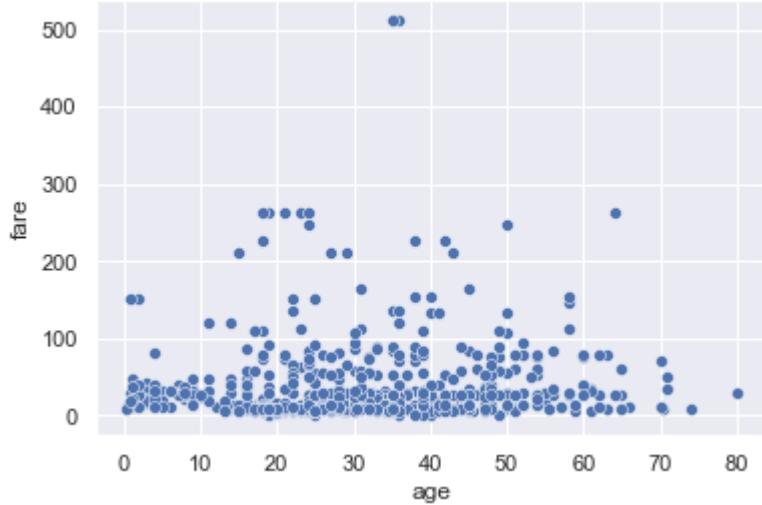
```

sns.scatterplot( *, x=None, y=None, hue=None, style=None, size=None, data=None, palette=None,
hue_order=None, hue_norm=None, sizes=None, size_order=None, size_norm=None, markers=True,
style_order=None, x_bins=None, y_bins=None, units=None, estimator=None, ci=95, n_boot=1000,
alpha=None, x_jitter=None, y_jitter=None, legend='auto', ax=None, **kwargs, )Parameters -----
x, y : vectors or keys in ``data`` Variables that specify positions on the x and y axes. hue : vector or key in ``data`` Grouping variable that will produce points with different colors. Can be either categorical or numeric, although color mapping will behave differently in latter case. size : vector or key in ``data``
```

Grouping variable that will produce points with different sizes. Can be either categorical or numeric, although size mapping will behave differently in latter case. style : vector or key in ``data`` Grouping variable that will produce points with different markers. Can have a numeric dtype but will always be treated as categorical. data : :class:`pandas.DataFrame`, :class:`numpy.ndarray`, mapping, or sequence Input data structure. Either a long-form collection of vectors that can be assigned to named variables or a wide-form dataset that will be internally reshaped. palette : string, list, dict, or :class:`matplotlib.colors.Colormap` Method for choosing the colors to use when mapping the ``hue`` semantic. String values are passed to :func:`color\_palette`. List or dict values imply categorical mapping, while a colormap object implies numeric mapping. hue\_order : vector of strings Specify the order of processing and plotting for categorical levels of the ``hue`` semantic. hue\_norm : tuple or :class:`matplotlib.colors.Normalize` Either a pair of values that set the normalization range in data units or an object that will map from data units into a [0, 1] interval. Usage implies numeric mapping. sizes : list, dict, or tuple An object that determines how sizes are chosen when ``size`` is used. It can always be a list of size values or a dict mapping levels of the ``size`` variable to sizes. When ``size`` is numeric, it can also be a tuple specifying the minimum and maximum size to use such that other values are normalized within this range. size\_order : list Specified order for appearance of the ``size`` variable levels, otherwise they are determined from the data. Not relevant when the ``size`` variable is numeric. size\_norm : tuple or Normalize object Normalization in data units for scaling plot objects when the ``size`` variable is numeric. markers : boolean, list, or dictionary Object determining how to draw the markers for different levels of the ``style`` variable. Setting to ``True`` will use default markers, or you can pass a list of markers or a dictionary mapping levels of the ``style`` variable to markers. Setting to ``False`` will draw marker-less lines. Markers are specified as in matplotlib. style\_order : list Specified order for appearance of the ``style`` variable levels otherwise they are determined from the data. Not relevant when the ``style`` variable is numeric. {x,y}\_bins : lists or arrays or functions \*Currently non-functional.\* units : vector or key in ``data`` Grouping variable identifying sampling units. When used, a separate line will be drawn for each unit with appropriate semantics, but no legend entry will be added. Useful for showing distribution of experimental replicates when exact identities are not needed. \*Currently non-functional.\* estimator : name of pandas method or callable or None Method for aggregating across multiple observations of the ``y`` variable at the same ``x`` level. If ``None``, all observations will be drawn. \*Currently non-functional.\* ci : int or "sd" or None Size of the confidence interval to draw when aggregating with an estimator. "sd" means to draw the standard deviation of the data. Setting to ``None`` will skip bootstrapping. \*Currently non-functional.\* n\_boot : int Number of bootstraps to use for computing the confidence interval. \*Currently non-functional.\* alpha : float Proportional opacity of the points. {x,y}\_jitter : booleans or floats \*Currently non-functional.\* legend : "auto", "brief", "full", or False How to draw the legend. If "brief", numeric ``hue`` and ``size`` variables will be represented with a sample of evenly spaced values. If "full", every group will get an entry in the legend. If "auto", choose between brief or full representation based on number of levels. If ``False``, no legend data is added and no legend is drawn. ax : :class:`matplotlib.axes.Axes` Pre-existing axes for the plot. Otherwise, call :func:`matplotlib.pyplot.gca` internally. kwargs : key, value mappings Other keyword arguments are passed down to :meth:`matplotlib.axes.Axes.scatter`.

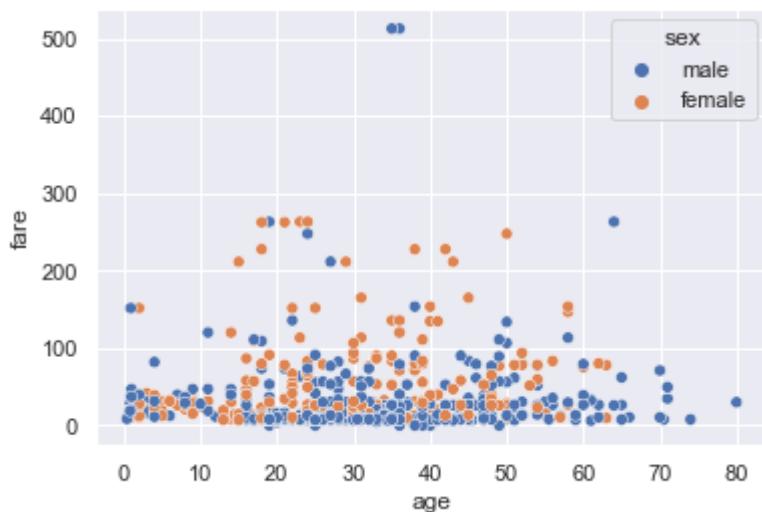
```
In [117...]: sns.scatterplot(x = "age", y = "fare", data = titanic_df)
```

```
Out[117...]: <AxesSubplot:xlabel='age', ylabel='fare'>
```



hue:-hue : vector or key in `data` Grouping variable that will produce points with different colors. Can be either categorical or numeric, although color mapping will behave differently in latter case.

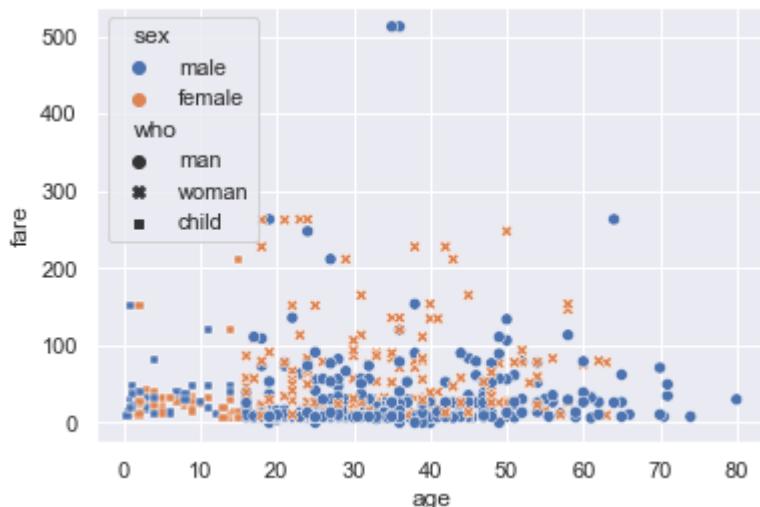
```
In [118...]: sns.scatterplot(x = "age", y = "fare", data = titanic_df, hue = "sex")  
Out[118...]: <AxesSubplot:xlabel='age', ylabel='fare'>
```



style : vector or key in `data` Grouping variable that will produce points with different markers. Can have a numeric dtype but will always be treated as categorical.

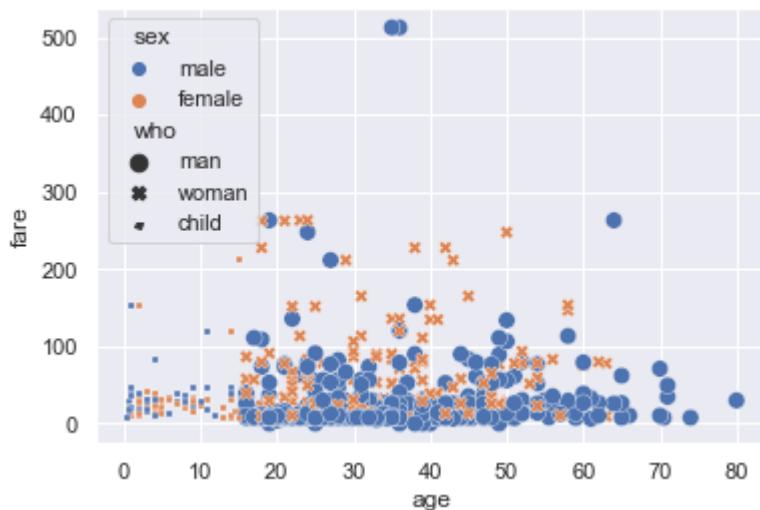
```
In [119...]:
```

```
sns.scatterplot(x = "age", y = "fare", data = titanic_df, hue = "sex", st:  
Out[119... <AxesSubplot:xlabel='age', ylabel='fare'>
```



**size** : vector or key in `data`.Grouping variable that will produce points with different sizes.Can be either categorical or numeric, although size mapping will behave differently in latter case.

```
In [120... sns.scatterplot(x = "age", y = "fare", data = titanic_df, hue = "sex", st:  
Out[120... <AxesSubplot:xlabel='age', ylabel='fare'>
```

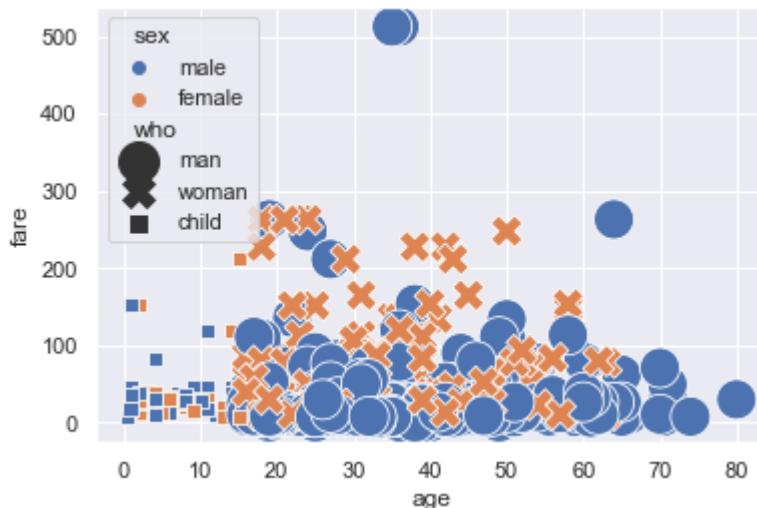


**sizes** : list, dict, or tuple.An object that determines how sizes are chosen when `size` is used. It can always be a list of size values or a dict mapping levels of the

`size` variable to sizes. When `size` is numeric, it can also be a tuple specifying the minimum and maximum size to use such that other values are normalized within this range.

```
In [121... sns.scatterplot(x = "age", y = "fare", data = titanic_df, hue = "sex", s...
```

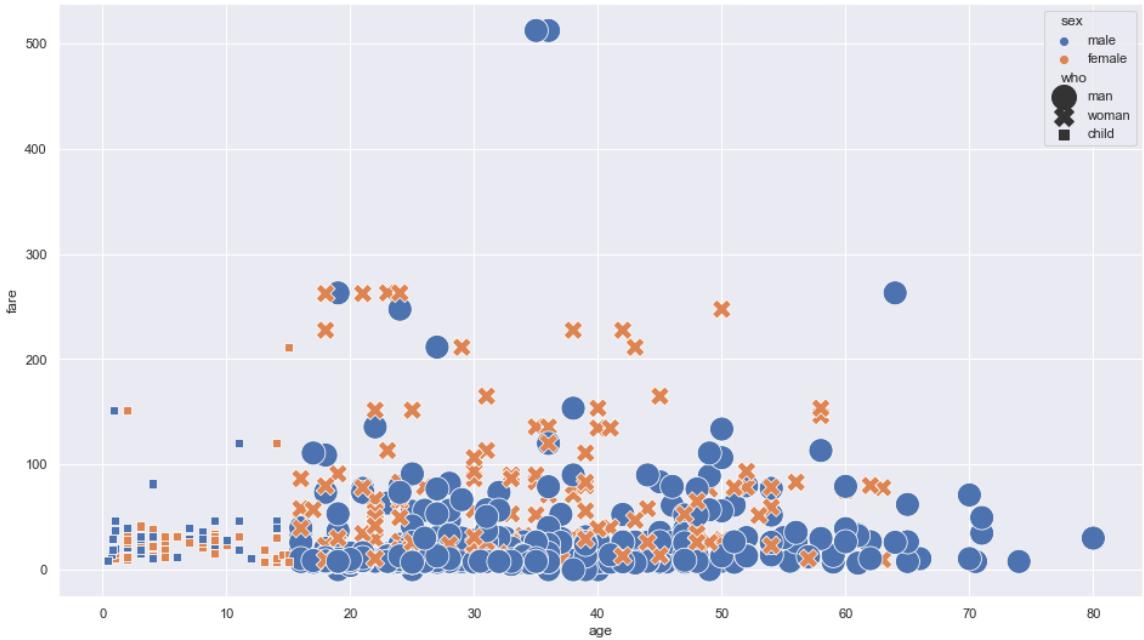
```
Out[121... <AxesSubplot:xlabel='age', ylabel='fare'>
```



`figsize` :- `plt.figure(figsize)` To enlarge image.

```
In [122... plt.figure(figsize=(16, 9)) # To enlarge image.
sns.scatterplot(x = "age", y = "fare", data = titanic_df, hue = "sex", s...
```

```
Out[122... <AxesSubplot:xlabel='age', ylabel='fare'>
```



In [123...]

```
plt.figure(figsize=(16, 9))
sns.scatterplot(x = "who", y = "fare", data = titanic_df, hue = "alive",
```

Out[123...]



palette : string, list, dict, or  
: class: `matplotlib.colors.Colormap`.  
for choosing the colors to use when  
mapping the `hue` semantic.String values  
are passed to :func: `color_palette`. List  
or dict values imply categorical mapping,

# while a colormap object implies numeric mapping.

In [124...]

```
plt.figure(figsize=(16, 9))
sns.scatterplot(x = "who", y = "fare", data = titanic_df, hue = "alive",
                 sizes=(100, 400), palette="rocket", alpha=1) # alpha range
```

Out[124...]



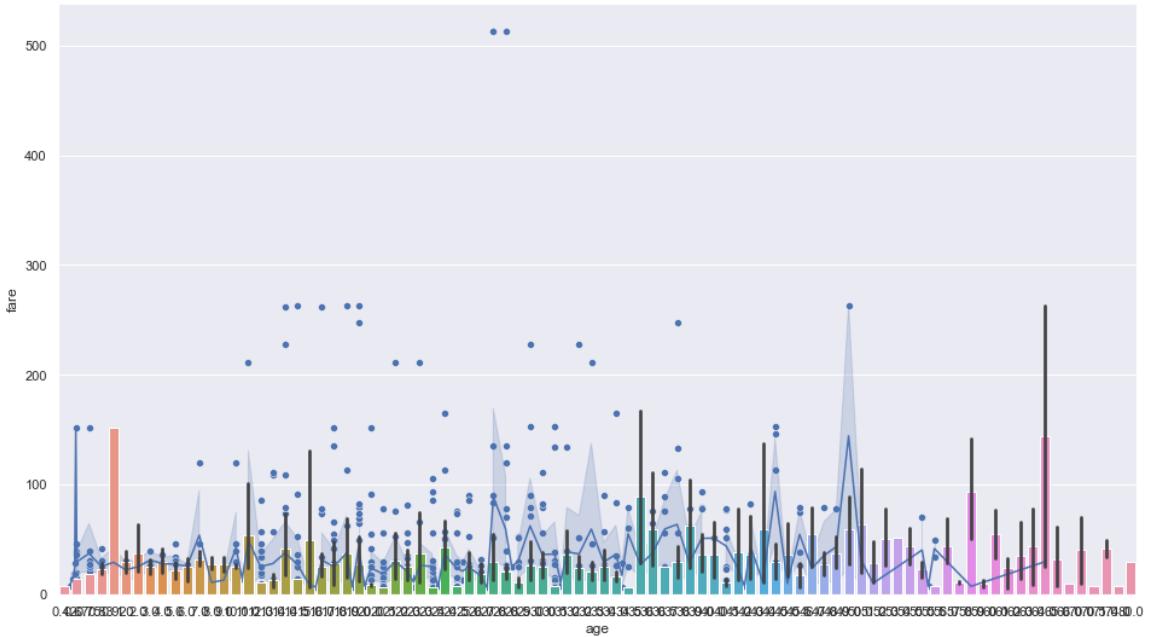
## Important for Data Visualization used Scatterplot, Lineplot, Barplot in One

In [125...]

```
plt.figure(figsize=(16, 9))
sns.scatterplot(x="age", y="fare", data = titanic_df)
sns.lineplot(x="age", y="fare", data = titanic_df)
sns.barplot(x="age", y="fare", data = titanic_df)
```

Out[125...]

<AxesSubplot:xlabel='age', ylabel='fare'>



## How to Draw Seaborn Heatmap

In [126...]

```
# IMPORT LIBRARIES
import seaborn as sns # for data visualization
import pandas as pd # for data analysis
import numpy as np # for numeric calculation
import matplotlib.pyplot as plt # for data visualization
```

In [127...]

```
arr_2d = np.linspace(1, 5, 12).reshape(4, 3)
arr_2d
```

Out[127...]

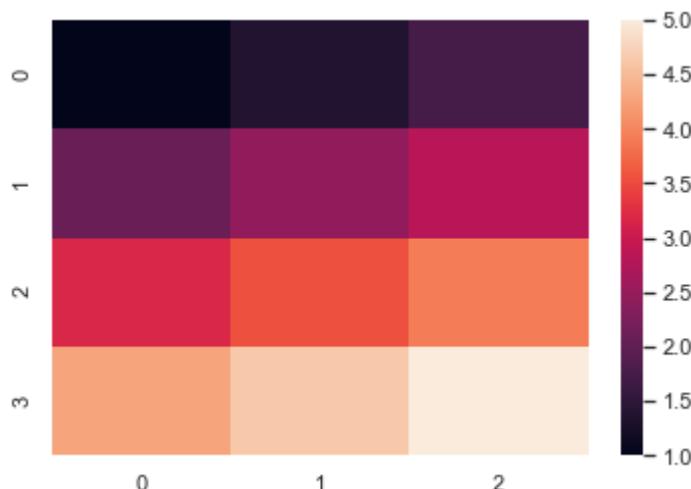
```
array([[1.          , 1.36363636, 1.72727273],
       [2.09090909, 2.45454545, 2.81818182],
       [3.18181818, 3.54545455, 3.90909091],
       [4.27272727, 4.63636364, 5.        ]])
```

""The Black box represents maximum value and White box represents minimum value""

In [128...]

```
sns.heatmap(arr_2d)
```

Out[128...]



In [129...]

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

Out[129...]

	survived	pclass	sex	age	sibsp	parch	fare	embarked	class	who	a
0	0	3	male	22.00	1	0	7.2500	S	Third	man	
1	1	1	female	38.00	1	0	71.2833	C	First	woman	
2	1	3	female	26.00	0	0	7.9250	S	Third	woman	
3	1	1	female	35.00	1	0	53.1000	S	First	woman	
4	0	3	male	35.00	0	0	8.0500	S	Third	man	
5	0	3	male	NaN	0	0	8.4583	Q	Third	man	
6	0	1	male	54.00	0	0	51.8625	S	First	man	
7	0	3	male	2.00	3	1	21.0750	S	Third	child	
8	1	3	female	27.00	0	2	11.1333	S	Third	woman	
9	1	2	female	14.00	1	0	30.0708	C	Second	child	
10	1	3	female	4.00	1	1	16.7000	S	Third	child	
11	1	1	female	58.00	0	0	26.5500	S	First	woman	
12	0	3	male	20.00	0	0	8.0500	S	Third	man	
13	0	3	male	39.00	1	5	31.2750	S	Third	man	
14	0	3	female	14.00	0	0	7.8542	S	Third	child	
15	1	2	female	55.00	0	0	16.0000	S	Second	woman	
16	0	3	male	2.00	4	1	29.1250	Q	Third	child	
17	1	2	male	NaN	0	0	13.0000	S	Second	man	
18	0	3	female	31.00	1	0	18.0000	S	Third	woman	
19	1	3	female	NaN	0	0	7.2250	C	Third	woman	
20	0	2	male	35.00	0	0	26.0000	S	Second	man	
21	1	2	male	34.00	0	0	13.0000	S	Second	man	
22	1	3	female	15.00	0	0	8.0292	Q	Third	child	
23	1	1	male	28.00	0	0	35.5000	S	First	man	
24	0	3	female	8.00	3	1	21.0750	S	Third	child	
25	1	3	female	38.00	1	5	31.3875	S	Third	woman	
26	0	3	male	NaN	0	0	7.2250	C	Third	man	
27	0	1	male	19.00	3	2	263.0000	S	First	man	
28	1	3	female	NaN	0	0	7.8792	Q	Third	woman	
29	0	3	male	NaN	0	0	7.8958	S	Third	man	
30	0	1	male	40.00	0	0	27.7208	C	First	man	
31	1	1	female	NaN	1	0	146.5208	C	First	woman	
32	1	3	female	NaN	0	0	7.7500	Q	Third	woman	
33	0	2	male	66.00	0	0	10.5000	S	Second	man	
34	0	1	male	28.00	1	0	82.1708	C	First	man	
35	0	1	male	42.00	1	0	52.0000	S	First	man	

36	1	3	male	NaN	0	0	7.2292	C	Third	man
37	0	3	male	21.00	0	0	8.0500	S	Third	man
38	0	3	female	18.00	2	0	18.0000	S	Third	woman
39	1	3	female	14.00	1	0	11.2417	C	Third	child
40	0	3	female	40.00	1	0	9.4750	S	Third	woman
41	0	2	female	27.00	1	0	21.0000	S	Second	woman
42	0	3	male	NaN	0	0	7.8958	C	Third	man
43	1	2	female	3.00	1	2	41.5792	C	Second	child
44	1	3	female	19.00	0	0	7.8792	Q	Third	woman
45	0	3	male	NaN	0	0	8.0500	S	Third	man
46	0	3	male	NaN	1	0	15.5000	Q	Third	man
47	1	3	female	NaN	0	0	7.7500	Q	Third	woman
48	0	3	male	NaN	2	0	21.6792	C	Third	man
49	0	3	female	18.00	1	0	17.8000	S	Third	woman
50	0	3	male	7.00	4	1	39.6875	S	Third	child
51	0	3	male	21.00	0	0	7.8000	S	Third	man
52	1	1	female	49.00	1	0	76.7292	C	First	woman
53	1	2	female	29.00	1	0	26.0000	S	Second	woman
54	0	1	male	65.00	0	1	61.9792	C	First	man
55	1	1	male	NaN	0	0	35.5000	S	First	man
56	1	2	female	21.00	0	0	10.5000	S	Second	woman
57	0	3	male	28.50	0	0	7.2292	C	Third	man
58	1	2	female	5.00	1	2	27.7500	S	Second	child
59	0	3	male	11.00	5	2	46.9000	S	Third	child
60	0	3	male	22.00	0	0	7.2292	C	Third	man
61	1	1	female	38.00	0	0	80.0000	NaN	First	woman
62	0	1	male	45.00	1	0	83.4750	S	First	man
63	0	3	male	4.00	3	2	27.9000	S	Third	child
64	0	1	male	NaN	0	0	27.7208	C	First	man
65	1	3	male	NaN	1	1	15.2458	C	Third	man
66	1	2	female	29.00	0	0	10.5000	S	Second	woman
67	0	3	male	19.00	0	0	8.1583	S	Third	man
68	1	3	female	17.00	4	2	7.9250	S	Third	woman
69	0	3	male	26.00	2	0	8.6625	S	Third	man
70	0	2	male	32.00	0	0	10.5000	S	Second	man
71	0	3	female	16.00	5	2	46.9000	S	Third	woman
72	0	2	male	21.00	0	0	73.5000	S	Second	man
73	0	3	male	26.00	1	0	14.4542	C	Third	man
74	1	3	male	32.00	0	0	56.4958	S	Third	man

75	0	3	male	25.00	0	0	7.6500	S	Third	man
76	0	3	male	NaN	0	0	7.8958	S	Third	man
77	0	3	male	NaN	0	0	8.0500	S	Third	man
78	1	2	male	0.83	0	2	29.0000	S	Second	child
79	1	3	female	30.00	0	0	12.4750	S	Third	woman
80	0	3	male	22.00	0	0	9.0000	S	Third	man
81	1	3	male	29.00	0	0	9.5000	S	Third	man
82	1	3	female	NaN	0	0	7.7875	Q	Third	woman
83	0	1	male	28.00	0	0	47.1000	S	First	man
84	1	2	female	17.00	0	0	10.5000	S	Second	woman
85	1	3	female	33.00	3	0	15.8500	S	Third	woman
86	0	3	male	16.00	1	3	34.3750	S	Third	man
87	0	3	male	NaN	0	0	8.0500	S	Third	man
88	1	1	female	23.00	3	2	263.0000	S	First	woman
89	0	3	male	24.00	0	0	8.0500	S	Third	man
90	0	3	male	29.00	0	0	8.0500	S	Third	man
91	0	3	male	20.00	0	0	7.8542	S	Third	man
92	0	1	male	46.00	1	0	61.1750	S	First	man
93	0	3	male	26.00	1	2	20.5750	S	Third	man
94	0	3	male	59.00	0	0	7.2500	S	Third	man
95	0	3	male	NaN	0	0	8.0500	S	Third	man
96	0	1	male	71.00	0	0	34.6542	C	First	man
97	1	1	male	23.00	0	1	63.3583	C	First	man
98	1	2	female	34.00	0	1	23.0000	S	Second	woman
99	0	2	male	34.00	1	0	26.0000	S	Second	man
100	0	3	female	28.00	0	0	7.8958	S	Third	woman
101	0	3	male	NaN	0	0	7.8958	S	Third	man
102	0	1	male	21.00	0	1	77.2875	S	First	man
103	0	3	male	33.00	0	0	8.6542	S	Third	man
104	0	3	male	37.00	2	0	7.9250	S	Third	man
105	0	3	male	28.00	0	0	7.8958	S	Third	man
106	1	3	female	21.00	0	0	7.6500	S	Third	woman
107	1	3	male	NaN	0	0	7.7750	S	Third	man
108	0	3	male	38.00	0	0	7.8958	S	Third	man
109	1	3	female	NaN	1	0	24.1500	Q	Third	woman
110	0	1	male	47.00	0	0	52.0000	S	First	man
111	0	3	female	14.50	1	0	14.4542	C	Third	child
112	0	3	male	22.00	0	0	8.0500	S	Third	man
113	0	3	female	20.00	1	0	9.8250	S	Third	woman

114	0	3	female	17.00	0	0	14.4583	C	Third	woman
115	0	3	male	21.00	0	0	7.9250	S	Third	man
116	0	3	male	70.50	0	0	7.7500	Q	Third	man
117	0	2	male	29.00	1	0	21.0000	S	Second	man
118	0	1	male	24.00	0	1	247.5208	C	First	man
119	0	3	female	2.00	4	2	31.2750	S	Third	child
120	0	2	male	21.00	2	0	73.5000	S	Second	man
121	0	3	male	Nan	0	0	8.0500	S	Third	man
122	0	2	male	32.50	1	0	30.0708	C	Second	man
123	1	2	female	32.50	0	0	13.0000	S	Second	woman
124	0	1	male	54.00	0	1	77.2875	S	First	man
125	1	3	male	12.00	1	0	11.2417	C	Third	child
126	0	3	male	Nan	0	0	7.7500	Q	Third	man
127	1	3	male	24.00	0	0	7.1417	S	Third	man
128	1	3	female	Nan	1	1	22.3583	C	Third	woman
129	0	3	male	45.00	0	0	6.9750	S	Third	man
130	0	3	male	33.00	0	0	7.8958	C	Third	man
131	0	3	male	20.00	0	0	7.0500	S	Third	man
132	0	3	female	47.00	1	0	14.5000	S	Third	woman
133	1	2	female	29.00	1	0	26.0000	S	Second	woman
134	0	2	male	25.00	0	0	13.0000	S	Second	man
135	0	2	male	23.00	0	0	15.0458	C	Second	man
136	1	1	female	19.00	0	2	26.2833	S	First	woman
137	0	1	male	37.00	1	0	53.1000	S	First	man
138	0	3	male	16.00	0	0	9.2167	S	Third	man
139	0	1	male	24.00	0	0	79.2000	C	First	man
140	0	3	female	Nan	0	2	15.2458	C	Third	woman
141	1	3	female	22.00	0	0	7.7500	S	Third	woman
142	1	3	female	24.00	1	0	15.8500	S	Third	woman
143	0	3	male	19.00	0	0	6.7500	Q	Third	man
144	0	2	male	18.00	0	0	11.5000	S	Second	man
145	0	2	male	19.00	1	1	36.7500	S	Second	man
146	1	3	male	27.00	0	0	7.7958	S	Third	man
147	0	3	female	9.00	2	2	34.3750	S	Third	child
148	0	2	male	36.50	0	2	26.0000	S	Second	man
149	0	2	male	42.00	0	0	13.0000	S	Second	man
150	0	2	male	51.00	0	0	12.5250	S	Second	man
151	1	1	female	22.00	1	0	66.6000	S	First	woman
152	0	3	male	55.50	0	0	8.0500	S	Third	man

153	0	3	male	40.50	0	2	14.5000	S	Third	man
154	0	3	male	NaN	0	0	7.3125	S	Third	man
155	0	1	male	51.00	0	1	61.3792	C	First	man
156	1	3	female	16.00	0	0	7.7333	Q	Third	woman
157	0	3	male	30.00	0	0	8.0500	S	Third	man
158	0	3	male	NaN	0	0	8.6625	S	Third	man
159	0	3	male	NaN	8	2	69.5500	S	Third	man
160	0	3	male	44.00	0	1	16.1000	S	Third	man
161	1	2	female	40.00	0	0	15.7500	S	Second	woman
162	0	3	male	26.00	0	0	7.7750	S	Third	man
163	0	3	male	17.00	0	0	8.6625	S	Third	man
164	0	3	male	1.00	4	1	39.6875	S	Third	child
165	1	3	male	9.00	0	2	20.5250	S	Third	child
166	1	1	female	NaN	0	1	55.0000	S	First	woman
167	0	3	female	45.00	1	4	27.9000	S	Third	woman
168	0	1	male	NaN	0	0	25.9250	S	First	man
169	0	3	male	28.00	0	0	56.4958	S	Third	man
170	0	1	male	61.00	0	0	33.5000	S	First	man
171	0	3	male	4.00	4	1	29.1250	Q	Third	child
172	1	3	female	1.00	1	1	11.1333	S	Third	child
173	0	3	male	21.00	0	0	7.9250	S	Third	man
174	0	1	male	56.00	0	0	30.6958	C	First	man
175	0	3	male	18.00	1	1	7.8542	S	Third	man
176	0	3	male	NaN	3	1	25.4667	S	Third	man
177	0	1	female	50.00	0	0	28.7125	C	First	woman
178	0	2	male	30.00	0	0	13.0000	S	Second	man
179	0	3	male	36.00	0	0	0.0000	S	Third	man
180	0	3	female	NaN	8	2	69.5500	S	Third	woman
181	0	2	male	NaN	0	0	15.0500	C	Second	man
182	0	3	male	9.00	4	2	31.3875	S	Third	child
183	1	2	male	1.00	2	1	39.0000	S	Second	child
184	1	3	female	4.00	0	2	22.0250	S	Third	child
185	0	1	male	NaN	0	0	50.0000	S	First	man
186	1	3	female	NaN	1	0	15.5000	Q	Third	woman
187	1	1	male	45.00	0	0	26.5500	S	First	man
188	0	3	male	40.00	1	1	15.5000	Q	Third	man
189	0	3	male	36.00	0	0	7.8958	S	Third	man
190	1	2	female	32.00	0	0	13.0000	S	Second	woman
191	0	2	male	19.00	0	0	13.0000	S	Second	man

192	1	3	female	19.00	1	0	7.8542	S	Third	woman
193	1	2	male	3.00	1	1	26.0000	S	Second	child
194	1	1	female	44.00	0	0	27.7208	C	First	woman
195	1	1	female	58.00	0	0	146.5208	C	First	woman
196	0	3	male	NaN	0	0	7.7500	Q	Third	man
197	0	3	male	42.00	0	1	8.4042	S	Third	man
198	1	3	female	NaN	0	0	7.7500	Q	Third	woman
199	0	2	female	24.00	0	0	13.0000	S	Second	woman
200	0	3	male	28.00	0	0	9.5000	S	Third	man
201	0	3	male	NaN	8	2	69.5500	S	Third	man
202	0	3	male	34.00	0	0	6.4958	S	Third	man
203	0	3	male	45.50	0	0	7.2250	C	Third	man
204	1	3	male	18.00	0	0	8.0500	S	Third	man
205	0	3	female	2.00	0	1	10.4625	S	Third	child
206	0	3	male	32.00	1	0	15.8500	S	Third	man
207	1	3	male	26.00	0	0	18.7875	C	Third	man
208	1	3	female	16.00	0	0	7.7500	Q	Third	woman
209	1	1	male	40.00	0	0	31.0000	C	First	man
210	0	3	male	24.00	0	0	7.0500	S	Third	man
211	1	2	female	35.00	0	0	21.0000	S	Second	woman
212	0	3	male	22.00	0	0	7.2500	S	Third	man
213	0	2	male	30.00	0	0	13.0000	S	Second	man
214	0	3	male	NaN	1	0	7.7500	Q	Third	man
215	1	1	female	31.00	1	0	113.2750	C	First	woman
216	1	3	female	27.00	0	0	7.9250	S	Third	woman
217	0	2	male	42.00	1	0	27.0000	S	Second	man
218	1	1	female	32.00	0	0	76.2917	C	First	woman
219	0	2	male	30.00	0	0	10.5000	S	Second	man
220	1	3	male	16.00	0	0	8.0500	S	Third	man
221	0	2	male	27.00	0	0	13.0000	S	Second	man
222	0	3	male	51.00	0	0	8.0500	S	Third	man
223	0	3	male	NaN	0	0	7.8958	S	Third	man
224	1	1	male	38.00	1	0	90.0000	S	First	man
225	0	3	male	22.00	0	0	9.3500	S	Third	man
226	1	2	male	19.00	0	0	10.5000	S	Second	man
227	0	3	male	20.50	0	0	7.2500	S	Third	man
228	0	2	male	18.00	0	0	13.0000	S	Second	man
229	0	3	female	NaN	3	1	25.4667	S	Third	woman
230	1	1	female	35.00	1	0	83.4750	S	First	woman

231	0	3	male	29.00	0	0	7.7750	S	Third	man
232	0	2	male	59.00	0	0	13.5000	S	Second	man
233	1	3	female	5.00	4	2	31.3875	S	Third	child
234	0	2	male	24.00	0	0	10.5000	S	Second	man
235	0	3	female	NaN	0	0	7.5500	S	Third	woman
236	0	2	male	44.00	1	0	26.0000	S	Second	man
237	1	2	female	8.00	0	2	26.2500	S	Second	child
238	0	2	male	19.00	0	0	10.5000	S	Second	man
239	0	2	male	33.00	0	0	12.2750	S	Second	man
240	0	3	female	NaN	1	0	14.4542	C	Third	woman
241	1	3	female	NaN	1	0	15.5000	Q	Third	woman
242	0	2	male	29.00	0	0	10.5000	S	Second	man
243	0	3	male	22.00	0	0	7.1250	S	Third	man
244	0	3	male	30.00	0	0	7.2250	C	Third	man
245	0	1	male	44.00	2	0	90.0000	Q	First	man
246	0	3	female	25.00	0	0	7.7750	S	Third	woman
247	1	2	female	24.00	0	2	14.5000	S	Second	woman
248	1	1	male	37.00	1	1	52.5542	S	First	man
249	0	2	male	54.00	1	0	26.0000	S	Second	man
250	0	3	male	NaN	0	0	7.2500	S	Third	man
251	0	3	female	29.00	1	1	10.4625	S	Third	woman
252	0	1	male	62.00	0	0	26.5500	S	First	man
253	0	3	male	30.00	1	0	16.1000	S	Third	man
254	0	3	female	41.00	0	2	20.2125	S	Third	woman
255	1	3	female	29.00	0	2	15.2458	C	Third	woman
256	1	1	female	NaN	0	0	79.2000	C	First	woman
257	1	1	female	30.00	0	0	86.5000	S	First	woman
258	1	1	female	35.00	0	0	512.3292	C	First	woman
259	1	2	female	50.00	0	1	26.0000	S	Second	woman
260	0	3	male	NaN	0	0	7.7500	Q	Third	man
261	1	3	male	3.00	4	2	31.3875	S	Third	child
262	0	1	male	52.00	1	1	79.6500	S	First	man
263	0	1	male	40.00	0	0	0.0000	S	First	man
264	0	3	female	NaN	0	0	7.7500	Q	Third	woman
265	0	2	male	36.00	0	0	10.5000	S	Second	man
266	0	3	male	16.00	4	1	39.6875	S	Third	man
267	1	3	male	25.00	1	0	7.7750	S	Third	man
268	1	1	female	58.00	0	1	153.4625	S	First	woman
269	1	1	female	35.00	0	0	135.6333	S	First	woman

270	0	1	male	NaN	0	0	31.0000	S	First	man
271	1	3	male	25.00	0	0	0.0000	S	Third	man
272	1	2	female	41.00	0	1	19.5000	S	Second	woman
273	0	1	male	37.00	0	1	29.7000	C	First	man
274	1	3	female	NaN	0	0	7.7500	Q	Third	woman
275	1	1	female	63.00	1	0	77.9583	S	First	woman
276	0	3	female	45.00	0	0	7.7500	S	Third	woman
277	0	2	male	NaN	0	0	0.0000	S	Second	man
278	0	3	male	7.00	4	1	29.1250	Q	Third	child
279	1	3	female	35.00	1	1	20.2500	S	Third	woman
280	0	3	male	65.00	0	0	7.7500	Q	Third	man
281	0	3	male	28.00	0	0	7.8542	S	Third	man
282	0	3	male	16.00	0	0	9.5000	S	Third	man
283	1	3	male	19.00	0	0	8.0500	S	Third	man
284	0	1	male	NaN	0	0	26.0000	S	First	man
285	0	3	male	33.00	0	0	8.6625	C	Third	man
286	1	3	male	30.00	0	0	9.5000	S	Third	man
287	0	3	male	22.00	0	0	7.8958	S	Third	man
288	1	2	male	42.00	0	0	13.0000	S	Second	man
289	1	3	female	22.00	0	0	7.7500	Q	Third	woman
290	1	1	female	26.00	0	0	78.8500	S	First	woman
291	1	1	female	19.00	1	0	91.0792	C	First	woman
292	0	2	male	36.00	0	0	12.8750	C	Second	man
293	0	3	female	24.00	0	0	8.8500	S	Third	woman
294	0	3	male	24.00	0	0	7.8958	S	Third	man
295	0	1	male	NaN	0	0	27.7208	C	First	man
296	0	3	male	23.50	0	0	7.2292	C	Third	man
297	0	1	female	2.00	1	2	151.5500	S	First	child
298	1	1	male	NaN	0	0	30.5000	S	First	man
299	1	1	female	50.00	0	1	247.5208	C	First	woman
300	1	3	female	NaN	0	0	7.7500	Q	Third	woman
301	1	3	male	NaN	2	0	23.2500	Q	Third	man
302	0	3	male	19.00	0	0	0.0000	S	Third	man
303	1	2	female	NaN	0	0	12.3500	Q	Second	woman
304	0	3	male	NaN	0	0	8.0500	S	Third	man
305	1	1	male	0.92	1	2	151.5500	S	First	child
306	1	1	female	NaN	0	0	110.8833	C	First	woman
307	1	1	female	17.00	1	0	108.9000	C	First	woman
308	0	2	male	30.00	1	0	24.0000	C	Second	man

309	1	1	female	30.00	0	0	56.9292	C	First	woman
310	1	1	female	24.00	0	0	83.1583	C	First	woman
311	1	1	female	18.00	2	2	262.3750	C	First	woman
312	0	2	female	26.00	1	1	26.0000	S	Second	woman
313	0	3	male	28.00	0	0	7.8958	S	Third	man
314	0	2	male	43.00	1	1	26.2500	S	Second	man
315	1	3	female	26.00	0	0	7.8542	S	Third	woman
316	1	2	female	24.00	1	0	26.0000	S	Second	woman
317	0	2	male	54.00	0	0	14.0000	S	Second	man
318	1	1	female	31.00	0	2	164.8667	S	First	woman
319	1	1	female	40.00	1	1	134.5000	C	First	woman
320	0	3	male	22.00	0	0	7.2500	S	Third	man
321	0	3	male	27.00	0	0	7.8958	S	Third	man
322	1	2	female	30.00	0	0	12.3500	Q	Second	woman
323	1	2	female	22.00	1	1	29.0000	S	Second	woman
324	0	3	male	NaN	8	2	69.5500	S	Third	man
325	1	1	female	36.00	0	0	135.6333	C	First	woman
326	0	3	male	61.00	0	0	6.2375	S	Third	man
327	1	2	female	36.00	0	0	13.0000	S	Second	woman
328	1	3	female	31.00	1	1	20.5250	S	Third	woman
329	1	1	female	16.00	0	1	57.9792	C	First	woman
330	1	3	female	NaN	2	0	23.2500	Q	Third	woman
331	0	1	male	45.50	0	0	28.5000	S	First	man
332	0	1	male	38.00	0	1	153.4625	S	First	man
333	0	3	male	16.00	2	0	18.0000	S	Third	man
334	1	1	female	NaN	1	0	133.6500	S	First	woman
335	0	3	male	NaN	0	0	7.8958	S	Third	man
336	0	1	male	29.00	1	0	66.6000	S	First	man
337	1	1	female	41.00	0	0	134.5000	C	First	woman
338	1	3	male	45.00	0	0	8.0500	S	Third	man
339	0	1	male	45.00	0	0	35.5000	S	First	man
340	1	2	male	2.00	1	1	26.0000	S	Second	child
341	1	1	female	24.00	3	2	263.0000	S	First	woman
342	0	2	male	28.00	0	0	13.0000	S	Second	man
343	0	2	male	25.00	0	0	13.0000	S	Second	man
344	0	2	male	36.00	0	0	13.0000	S	Second	man
345	1	2	female	24.00	0	0	13.0000	S	Second	woman
346	1	2	female	40.00	0	0	13.0000	S	Second	woman
347	1	3	female	NaN	1	0	16.1000	S	Third	woman

348	1	3	male	3.00	1	1	15.9000	S	Third	child
349	0	3	male	42.00	0	0	8.6625	S	Third	man
350	0	3	male	23.00	0	0	9.2250	S	Third	man
351	0	1	male	NaN	0	0	35.0000	S	First	man
352	0	3	male	15.00	1	1	7.2292	C	Third	child
353	0	3	male	25.00	1	0	17.8000	S	Third	man
354	0	3	male	NaN	0	0	7.2250	C	Third	man
355	0	3	male	28.00	0	0	9.5000	S	Third	man
356	1	1	female	22.00	0	1	55.0000	S	First	woman
357	0	2	female	38.00	0	0	13.0000	S	Second	woman
358	1	3	female	NaN	0	0	7.8792	Q	Third	woman
359	1	3	female	NaN	0	0	7.8792	Q	Third	woman
360	0	3	male	40.00	1	4	27.9000	S	Third	man
361	0	2	male	29.00	1	0	27.7208	C	Second	man
362	0	3	female	45.00	0	1	14.4542	C	Third	woman
363	0	3	male	35.00	0	0	7.0500	S	Third	man
364	0	3	male	NaN	1	0	15.5000	Q	Third	man
365	0	3	male	30.00	0	0	7.2500	S	Third	man
366	1	1	female	60.00	1	0	75.2500	C	First	woman
367	1	3	female	NaN	0	0	7.2292	C	Third	woman
368	1	3	female	NaN	0	0	7.7500	Q	Third	woman
369	1	1	female	24.00	0	0	69.3000	C	First	woman
370	1	1	male	25.00	1	0	55.4417	C	First	man
371	0	3	male	18.00	1	0	6.4958	S	Third	man
372	0	3	male	19.00	0	0	8.0500	S	Third	man
373	0	1	male	22.00	0	0	135.6333	C	First	man
374	0	3	female	3.00	3	1	21.0750	S	Third	child
375	1	1	female	NaN	1	0	82.1708	C	First	woman
376	1	3	female	22.00	0	0	7.2500	S	Third	woman
377	0	1	male	27.00	0	2	211.5000	C	First	man
378	0	3	male	20.00	0	0	4.0125	C	Third	man
379	0	3	male	19.00	0	0	7.7750	S	Third	man
380	1	1	female	42.00	0	0	227.5250	C	First	woman
381	1	3	female	1.00	0	2	15.7417	C	Third	child
382	0	3	male	32.00	0	0	7.9250	S	Third	man
383	1	1	female	35.00	1	0	52.0000	S	First	woman
384	0	3	male	NaN	0	0	7.8958	S	Third	man
385	0	2	male	18.00	0	0	73.5000	S	Second	man
386	0	3	male	1.00	5	2	46.9000	S	Third	child

387	1	2	female	36.00	0	0	13.0000	S	Second	woman
388	0	3	male	NaN	0	0	7.7292	Q	Third	man
389	1	2	female	17.00	0	0	12.0000	C	Second	woman
390	1	1	male	36.00	1	2	120.0000	S	First	man
391	1	3	male	21.00	0	0	7.7958	S	Third	man
392	0	3	male	28.00	2	0	7.9250	S	Third	man
393	1	1	female	23.00	1	0	113.2750	C	First	woman
394	1	3	female	24.00	0	2	16.7000	S	Third	woman
395	0	3	male	22.00	0	0	7.7958	S	Third	man
396	0	3	female	31.00	0	0	7.8542	S	Third	woman
397	0	2	male	46.00	0	0	26.0000	S	Second	man
398	0	2	male	23.00	0	0	10.5000	S	Second	man
399	1	2	female	28.00	0	0	12.6500	S	Second	woman
400	1	3	male	39.00	0	0	7.9250	S	Third	man
401	0	3	male	26.00	0	0	8.0500	S	Third	man
402	0	3	female	21.00	1	0	9.8250	S	Third	woman
403	0	3	male	28.00	1	0	15.8500	S	Third	man
404	0	3	female	20.00	0	0	8.6625	S	Third	woman
405	0	2	male	34.00	1	0	21.0000	S	Second	man
406	0	3	male	51.00	0	0	7.7500	S	Third	man
407	1	2	male	3.00	1	1	18.7500	S	Second	child
408	0	3	male	21.00	0	0	7.7750	S	Third	man
409	0	3	female	NaN	3	1	25.4667	S	Third	woman
410	0	3	male	NaN	0	0	7.8958	S	Third	man
411	0	3	male	NaN	0	0	6.8583	Q	Third	man
412	1	1	female	33.00	1	0	90.0000	Q	First	woman
413	0	2	male	NaN	0	0	0.0000	S	Second	man
414	1	3	male	44.00	0	0	7.9250	S	Third	man
415	0	3	female	NaN	0	0	8.0500	S	Third	woman
416	1	2	female	34.00	1	1	32.5000	S	Second	woman
417	1	2	female	18.00	0	2	13.0000	S	Second	woman
418	0	2	male	30.00	0	0	13.0000	S	Second	man
419	0	3	female	10.00	0	2	24.1500	S	Third	child
420	0	3	male	NaN	0	0	7.8958	C	Third	man
421	0	3	male	21.00	0	0	7.7333	Q	Third	man
422	0	3	male	29.00	0	0	7.8750	S	Third	man
423	0	3	female	28.00	1	1	14.4000	S	Third	woman
424	0	3	male	18.00	1	1	20.2125	S	Third	man
425	0	3	male	NaN	0	0	7.2500	S	Third	man

426	1	2	female	28.00	1	0	26.0000	S	Second	woman
427	1	2	female	19.00	0	0	26.0000	S	Second	woman
428	0	3	male	NaN	0	0	7.7500	Q	Third	man
429	1	3	male	32.00	0	0	8.0500	S	Third	man
430	1	1	male	28.00	0	0	26.5500	S	First	man
431	1	3	female	NaN	1	0	16.1000	S	Third	woman
432	1	2	female	42.00	1	0	26.0000	S	Second	woman
433	0	3	male	17.00	0	0	7.1250	S	Third	man
434	0	1	male	50.00	1	0	55.9000	S	First	man
435	1	1	female	14.00	1	2	120.0000	S	First	child
436	0	3	female	21.00	2	2	34.3750	S	Third	woman
437	1	2	female	24.00	2	3	18.7500	S	Second	woman
438	0	1	male	64.00	1	4	263.0000	S	First	man
439	0	2	male	31.00	0	0	10.5000	S	Second	man
440	1	2	female	45.00	1	1	26.2500	S	Second	woman
441	0	3	male	20.00	0	0	9.5000	S	Third	man
442	0	3	male	25.00	1	0	7.7750	S	Third	man
443	1	2	female	28.00	0	0	13.0000	S	Second	woman
444	1	3	male	NaN	0	0	8.1125	S	Third	man
445	1	1	male	4.00	0	2	81.8583	S	First	child
446	1	2	female	13.00	0	1	19.5000	S	Second	child
447	1	1	male	34.00	0	0	26.5500	S	First	man
448	1	3	female	5.00	2	1	19.2583	C	Third	child
449	1	1	male	52.00	0	0	30.5000	S	First	man
450	0	2	male	36.00	1	2	27.7500	S	Second	man
451	0	3	male	NaN	1	0	19.9667	S	Third	man
452	0	1	male	30.00	0	0	27.7500	C	First	man
453	1	1	male	49.00	1	0	89.1042	C	First	man
454	0	3	male	NaN	0	0	8.0500	S	Third	man
455	1	3	male	29.00	0	0	7.8958	C	Third	man
456	0	1	male	65.00	0	0	26.5500	S	First	man
457	1	1	female	NaN	1	0	51.8625	S	First	woman
458	1	2	female	50.00	0	0	10.5000	S	Second	woman
459	0	3	male	NaN	0	0	7.7500	Q	Third	man
460	1	1	male	48.00	0	0	26.5500	S	First	man
461	0	3	male	34.00	0	0	8.0500	S	Third	man
462	0	1	male	47.00	0	0	38.5000	S	First	man
463	0	2	male	48.00	0	0	13.0000	S	Second	man
464	0	3	male	NaN	0	0	8.0500	S	Third	man

465	0	3	male	38.00	0	0	7.0500	S	Third	man
466	0	2	male	NaN	0	0	0.0000	S	Second	man
467	0	1	male	56.00	0	0	26.5500	S	First	man
468	0	3	male	NaN	0	0	7.7250	Q	Third	man
469	1	3	female	0.75	2	1	19.2583	C	Third	child
470	0	3	male	NaN	0	0	7.2500	S	Third	man
471	0	3	male	38.00	0	0	8.6625	S	Third	man
472	1	2	female	33.00	1	2	27.7500	S	Second	woman
473	1	2	female	23.00	0	0	13.7917	C	Second	woman
474	0	3	female	22.00	0	0	9.8375	S	Third	woman
475	0	1	male	NaN	0	0	52.0000	S	First	man
476	0	2	male	34.00	1	0	21.0000	S	Second	man
477	0	3	male	29.00	1	0	7.0458	S	Third	man
478	0	3	male	22.00	0	0	7.5208	S	Third	man
479	1	3	female	2.00	0	1	12.2875	S	Third	child
480	0	3	male	9.00	5	2	46.9000	S	Third	child
481	0	2	male	NaN	0	0	0.0000	S	Second	man
482	0	3	male	50.00	0	0	8.0500	S	Third	man
483	1	3	female	63.00	0	0	9.5875	S	Third	woman
484	1	1	male	25.00	1	0	91.0792	C	First	man
485	0	3	female	NaN	3	1	25.4667	S	Third	woman
486	1	1	female	35.00	1	0	90.0000	S	First	woman
487	0	1	male	58.00	0	0	29.7000	C	First	man
488	0	3	male	30.00	0	0	8.0500	S	Third	man
489	1	3	male	9.00	1	1	15.9000	S	Third	child
490	0	3	male	NaN	1	0	19.9667	S	Third	man
491	0	3	male	21.00	0	0	7.2500	S	Third	man
492	0	1	male	55.00	0	0	30.5000	S	First	man
493	0	1	male	71.00	0	0	49.5042	C	First	man
494	0	3	male	21.00	0	0	8.0500	S	Third	man
495	0	3	male	NaN	0	0	14.4583	C	Third	man
496	1	1	female	54.00	1	0	78.2667	C	First	woman
497	0	3	male	NaN	0	0	15.1000	S	Third	man
498	0	1	female	25.00	1	2	151.5500	S	First	woman
499	0	3	male	24.00	0	0	7.7958	S	Third	man
500	0	3	male	17.00	0	0	8.6625	S	Third	man
501	0	3	female	21.00	0	0	7.7500	Q	Third	woman
502	0	3	female	NaN	0	0	7.6292	Q	Third	woman
503	0	3	female	37.00	0	0	9.5875	S	Third	woman

504	1	1	female	16.00	0	0	86.5000	S	First	woman
505	0	1	male	18.00	1	0	108.9000	C	First	man
506	1	2	female	33.00	0	2	26.0000	S	Second	woman
507	1	1	male	NaN	0	0	26.5500	S	First	man
508	0	3	male	28.00	0	0	22.5250	S	Third	man
509	1	3	male	26.00	0	0	56.4958	S	Third	man
510	1	3	male	29.00	0	0	7.7500	Q	Third	man
511	0	3	male	NaN	0	0	8.0500	S	Third	man
512	1	1	male	36.00	0	0	26.2875	S	First	man
513	1	1	female	54.00	1	0	59.4000	C	First	woman
514	0	3	male	24.00	0	0	7.4958	S	Third	man
515	0	1	male	47.00	0	0	34.0208	S	First	man
516	1	2	female	34.00	0	0	10.5000	S	Second	woman
517	0	3	male	NaN	0	0	24.1500	Q	Third	man
518	1	2	female	36.00	1	0	26.0000	S	Second	woman
519	0	3	male	32.00	0	0	7.8958	S	Third	man
520	1	1	female	30.00	0	0	93.5000	S	First	woman
521	0	3	male	22.00	0	0	7.8958	S	Third	man
522	0	3	male	NaN	0	0	7.2250	C	Third	man
523	1	1	female	44.00	0	1	57.9792	C	First	woman
524	0	3	male	NaN	0	0	7.2292	C	Third	man
525	0	3	male	40.50	0	0	7.7500	Q	Third	man
526	1	2	female	50.00	0	0	10.5000	S	Second	woman
527	0	1	male	NaN	0	0	221.7792	S	First	man
528	0	3	male	39.00	0	0	7.9250	S	Third	man
529	0	2	male	23.00	2	1	11.5000	S	Second	man
530	1	2	female	2.00	1	1	26.0000	S	Second	child
531	0	3	male	NaN	0	0	7.2292	C	Third	man
532	0	3	male	17.00	1	1	7.2292	C	Third	man
533	1	3	female	NaN	0	2	22.3583	C	Third	woman
534	0	3	female	30.00	0	0	8.6625	S	Third	woman
535	1	2	female	7.00	0	2	26.2500	S	Second	child
536	0	1	male	45.00	0	0	26.5500	S	First	man
537	1	1	female	30.00	0	0	106.4250	C	First	woman
538	0	3	male	NaN	0	0	14.5000	S	Third	man
539	1	1	female	22.00	0	2	49.5000	C	First	woman
540	1	1	female	36.00	0	2	71.0000	S	First	woman
541	0	3	female	9.00	4	2	31.2750	S	Third	child
542	0	3	female	11.00	4	2	31.2750	S	Third	child

543	1	2	male	32.00	1	0	26.0000	S	Second	man
544	0	1	male	50.00	1	0	106.4250	C	First	man
545	0	1	male	64.00	0	0	26.0000	S	First	man
546	1	2	female	19.00	1	0	26.0000	S	Second	woman
547	1	2	male	Nan	0	0	13.8625	C	Second	man
548	0	3	male	33.00	1	1	20.5250	S	Third	man
549	1	2	male	8.00	1	1	36.7500	S	Second	child
550	1	1	male	17.00	0	2	110.8833	C	First	man
551	0	2	male	27.00	0	0	26.0000	S	Second	man
552	0	3	male	Nan	0	0	7.8292	Q	Third	man
553	1	3	male	22.00	0	0	7.2250	C	Third	man
554	1	3	female	22.00	0	0	7.7750	S	Third	woman
555	0	1	male	62.00	0	0	26.5500	S	First	man
556	1	1	female	48.00	1	0	39.6000	C	First	woman
557	0	1	male	Nan	0	0	227.5250	C	First	man
558	1	1	female	39.00	1	1	79.6500	S	First	woman
559	1	3	female	36.00	1	0	17.4000	S	Third	woman
560	0	3	male	Nan	0	0	7.7500	Q	Third	man
561	0	3	male	40.00	0	0	7.8958	S	Third	man
562	0	2	male	28.00	0	0	13.5000	S	Second	man
563	0	3	male	Nan	0	0	8.0500	S	Third	man
564	0	3	female	Nan	0	0	8.0500	S	Third	woman
565	0	3	male	24.00	2	0	24.1500	S	Third	man
566	0	3	male	19.00	0	0	7.8958	S	Third	man
567	0	3	female	29.00	0	4	21.0750	S	Third	woman
568	0	3	male	Nan	0	0	7.2292	C	Third	man
569	1	3	male	32.00	0	0	7.8542	S	Third	man
570	1	2	male	62.00	0	0	10.5000	S	Second	man
571	1	1	female	53.00	2	0	51.4792	S	First	woman
572	1	1	male	36.00	0	0	26.3875	S	First	man
573	1	3	female	Nan	0	0	7.7500	Q	Third	woman
574	0	3	male	16.00	0	0	8.0500	S	Third	man
575	0	3	male	19.00	0	0	14.5000	S	Third	man
576	1	2	female	34.00	0	0	13.0000	S	Second	woman
577	1	1	female	39.00	1	0	55.9000	S	First	woman
578	0	3	female	Nan	1	0	14.4583	C	Third	woman
579	1	3	male	32.00	0	0	7.9250	S	Third	man
580	1	2	female	25.00	1	1	30.0000	S	Second	woman
581	1	1	female	39.00	1	1	110.8833	C	First	woman

582	0	2	male	54.00	0	0	26.0000	S	Second	man
583	0	1	male	36.00	0	0	40.1250	C	First	man
584	0	3	male	NaN	0	0	8.7125	C	Third	man
585	1	1	female	18.00	0	2	79.6500	S	First	woman
586	0	2	male	47.00	0	0	15.0000	S	Second	man
587	1	1	male	60.00	1	1	79.2000	C	First	man
588	0	3	male	22.00	0	0	8.0500	S	Third	man
589	0	3	male	NaN	0	0	8.0500	S	Third	man
590	0	3	male	35.00	0	0	7.1250	S	Third	man
591	1	1	female	52.00	1	0	78.2667	C	First	woman
592	0	3	male	47.00	0	0	7.2500	S	Third	man
593	0	3	female	NaN	0	2	7.7500	Q	Third	woman
594	0	2	male	37.00	1	0	26.0000	S	Second	man
595	0	3	male	36.00	1	1	24.1500	S	Third	man
596	1	2	female	NaN	0	0	33.0000	S	Second	woman
597	0	3	male	49.00	0	0	0.0000	S	Third	man
598	0	3	male	NaN	0	0	7.2250	C	Third	man
599	1	1	male	49.00	1	0	56.9292	C	First	man
600	1	2	female	24.00	2	1	27.0000	S	Second	woman
601	0	3	male	NaN	0	0	7.8958	S	Third	man
602	0	1	male	NaN	0	0	42.4000	S	First	man
603	0	3	male	44.00	0	0	8.0500	S	Third	man
604	1	1	male	35.00	0	0	26.5500	C	First	man
605	0	3	male	36.00	1	0	15.5500	S	Third	man
606	0	3	male	30.00	0	0	7.8958	S	Third	man
607	1	1	male	27.00	0	0	30.5000	S	First	man
608	1	2	female	22.00	1	2	41.5792	C	Second	woman
609	1	1	female	40.00	0	0	153.4625	S	First	woman
610	0	3	female	39.00	1	5	31.2750	S	Third	woman
611	0	3	male	NaN	0	0	7.0500	S	Third	man
612	1	3	female	NaN	1	0	15.5000	Q	Third	woman
613	0	3	male	NaN	0	0	7.7500	Q	Third	man
614	0	3	male	35.00	0	0	8.0500	S	Third	man
615	1	2	female	24.00	1	2	65.0000	S	Second	woman
616	0	3	male	34.00	1	1	14.4000	S	Third	man
617	0	3	female	26.00	1	0	16.1000	S	Third	woman
618	1	2	female	4.00	2	1	39.0000	S	Second	child
619	0	2	male	26.00	0	0	10.5000	S	Second	man
620	0	3	male	27.00	1	0	14.4542	C	Third	man

621	1	1	male	42.00	1	0	52.5542	S	First	man
622	1	3	male	20.00	1	1	15.7417	C	Third	man
623	0	3	male	21.00	0	0	7.8542	S	Third	man
624	0	3	male	21.00	0	0	16.1000	S	Third	man
625	0	1	male	61.00	0	0	32.3208	S	First	man
626	0	2	male	57.00	0	0	12.3500	Q	Second	man
627	1	1	female	21.00	0	0	77.9583	S	First	woman
628	0	3	male	26.00	0	0	7.8958	S	Third	man
629	0	3	male	NaN	0	0	7.7333	Q	Third	man
630	1	1	male	80.00	0	0	30.0000	S	First	man
631	0	3	male	51.00	0	0	7.0542	S	Third	man
632	1	1	male	32.00	0	0	30.5000	C	First	man
633	0	1	male	NaN	0	0	0.0000	S	First	man
634	0	3	female	9.00	3	2	27.9000	S	Third	child
635	1	2	female	28.00	0	0	13.0000	S	Second	woman
636	0	3	male	32.00	0	0	7.9250	S	Third	man
637	0	2	male	31.00	1	1	26.2500	S	Second	man
638	0	3	female	41.00	0	5	39.6875	S	Third	woman
639	0	3	male	NaN	1	0	16.1000	S	Third	man
640	0	3	male	20.00	0	0	7.8542	S	Third	man
641	1	1	female	24.00	0	0	69.3000	C	First	woman
642	0	3	female	2.00	3	2	27.9000	S	Third	child
643	1	3	male	NaN	0	0	56.4958	S	Third	man
644	1	3	female	0.75	2	1	19.2583	C	Third	child
645	1	1	male	48.00	1	0	76.7292	C	First	man
646	0	3	male	19.00	0	0	7.8958	S	Third	man
647	1	1	male	56.00	0	0	35.5000	C	First	man
648	0	3	male	NaN	0	0	7.5500	S	Third	man
649	1	3	female	23.00	0	0	7.5500	S	Third	woman
650	0	3	male	NaN	0	0	7.8958	S	Third	man
651	1	2	female	18.00	0	1	23.0000	S	Second	woman
652	0	3	male	21.00	0	0	8.4333	S	Third	man
653	1	3	female	NaN	0	0	7.8292	Q	Third	woman
654	0	3	female	18.00	0	0	6.7500	Q	Third	woman
655	0	2	male	24.00	2	0	73.5000	S	Second	man
656	0	3	male	NaN	0	0	7.8958	S	Third	man
657	0	3	female	32.00	1	1	15.5000	Q	Third	woman
658	0	2	male	23.00	0	0	13.0000	S	Second	man
659	0	1	male	58.00	0	2	113.2750	C	First	man

660	1	1	male	50.00	2	0	133.6500	S	First	man
661	0	3	male	40.00	0	0	7.2250	C	Third	man
662	0	1	male	47.00	0	0	25.5875	S	First	man
663	0	3	male	36.00	0	0	7.4958	S	Third	man
664	1	3	male	20.00	1	0	7.9250	S	Third	man
665	0	2	male	32.00	2	0	73.5000	S	Second	man
666	0	2	male	25.00	0	0	13.0000	S	Second	man
667	0	3	male	NaN	0	0	7.7750	S	Third	man
668	0	3	male	43.00	0	0	8.0500	S	Third	man
669	1	1	female	NaN	1	0	52.0000	S	First	woman
670	1	2	female	40.00	1	1	39.0000	S	Second	woman
671	0	1	male	31.00	1	0	52.0000	S	First	man
672	0	2	male	70.00	0	0	10.5000	S	Second	man
673	1	2	male	31.00	0	0	13.0000	S	Second	man
674	0	2	male	NaN	0	0	0.0000	S	Second	man
675	0	3	male	18.00	0	0	7.7750	S	Third	man
676	0	3	male	24.50	0	0	8.0500	S	Third	man
677	1	3	female	18.00	0	0	9.8417	S	Third	woman
678	0	3	female	43.00	1	6	46.9000	S	Third	woman
679	1	1	male	36.00	0	1	512.3292	C	First	man
680	0	3	female	NaN	0	0	8.1375	Q	Third	woman
681	1	1	male	27.00	0	0	76.7292	C	First	man
682	0	3	male	20.00	0	0	9.2250	S	Third	man
683	0	3	male	14.00	5	2	46.9000	S	Third	child
684	0	2	male	60.00	1	1	39.0000	S	Second	man
685	0	2	male	25.00	1	2	41.5792	C	Second	man
686	0	3	male	14.00	4	1	39.6875	S	Third	child
687	0	3	male	19.00	0	0	10.1708	S	Third	man
688	0	3	male	18.00	0	0	7.7958	S	Third	man
689	1	1	female	15.00	0	1	211.3375	S	First	child
690	1	1	male	31.00	1	0	57.0000	S	First	man
691	1	3	female	4.00	0	1	13.4167	C	Third	child
692	1	3	male	NaN	0	0	56.4958	S	Third	man
693	0	3	male	25.00	0	0	7.2250	C	Third	man
694	0	1	male	60.00	0	0	26.5500	S	First	man
695	0	2	male	52.00	0	0	13.5000	S	Second	man
696	0	3	male	44.00	0	0	8.0500	S	Third	man
697	1	3	female	NaN	0	0	7.7333	Q	Third	woman
698	0	1	male	49.00	1	1	110.8833	C	First	man

699	0	3	male	42.00	0	0	7.6500	S	Third	man
700	1	1	female	18.00	1	0	227.5250	C	First	woman
701	1	1	male	35.00	0	0	26.2875	S	First	man
702	0	3	female	18.00	0	1	14.4542	C	Third	woman
703	0	3	male	25.00	0	0	7.7417	Q	Third	man
704	0	3	male	26.00	1	0	7.8542	S	Third	man
705	0	2	male	39.00	0	0	26.0000	S	Second	man
706	1	2	female	45.00	0	0	13.5000	S	Second	woman
707	1	1	male	42.00	0	0	26.2875	S	First	man
708	1	1	female	22.00	0	0	151.5500	S	First	woman
709	1	3	male	NaN	1	1	15.2458	C	Third	man
710	1	1	female	24.00	0	0	49.5042	C	First	woman
711	0	1	male	NaN	0	0	26.5500	S	First	man
712	1	1	male	48.00	1	0	52.0000	S	First	man
713	0	3	male	29.00	0	0	9.4833	S	Third	man
714	0	2	male	52.00	0	0	13.0000	S	Second	man
715	0	3	male	19.00	0	0	7.6500	S	Third	man
716	1	1	female	38.00	0	0	227.5250	C	First	woman
717	1	2	female	27.00	0	0	10.5000	S	Second	woman
718	0	3	male	NaN	0	0	15.5000	Q	Third	man
719	0	3	male	33.00	0	0	7.7750	S	Third	man
720	1	2	female	6.00	0	1	33.0000	S	Second	child
721	0	3	male	17.00	1	0	7.0542	S	Third	man
722	0	2	male	34.00	0	0	13.0000	S	Second	man
723	0	2	male	50.00	0	0	13.0000	S	Second	man
724	1	1	male	27.00	1	0	53.1000	S	First	man
725	0	3	male	20.00	0	0	8.6625	S	Third	man
726	1	2	female	30.00	3	0	21.0000	S	Second	woman
727	1	3	female	NaN	0	0	7.7375	Q	Third	woman
728	0	2	male	25.00	1	0	26.0000	S	Second	man
729	0	3	female	25.00	1	0	7.9250	S	Third	woman
730	1	1	female	29.00	0	0	211.3375	S	First	woman
731	0	3	male	11.00	0	0	18.7875	C	Third	child
732	0	2	male	NaN	0	0	0.0000	S	Second	man
733	0	2	male	23.00	0	0	13.0000	S	Second	man
734	0	2	male	23.00	0	0	13.0000	S	Second	man
735	0	3	male	28.50	0	0	16.1000	S	Third	man
736	0	3	female	48.00	1	3	34.3750	S	Third	woman
737	1	1	male	35.00	0	0	512.3292	C	First	man

738	0	3	male	NaN	0	0	7.8958	S	Third	man
739	0	3	male	NaN	0	0	7.8958	S	Third	man
740	1	1	male	NaN	0	0	30.0000	S	First	man
741	0	1	male	36.00	1	0	78.8500	S	First	man
742	1	1	female	21.00	2	2	262.3750	C	First	woman
743	0	3	male	24.00	1	0	16.1000	S	Third	man
744	1	3	male	31.00	0	0	7.9250	S	Third	man
745	0	1	male	70.00	1	1	71.0000	S	First	man
746	0	3	male	16.00	1	1	20.2500	S	Third	man
747	1	2	female	30.00	0	0	13.0000	S	Second	woman
748	0	1	male	19.00	1	0	53.1000	S	First	man
749	0	3	male	31.00	0	0	7.7500	Q	Third	man
750	1	2	female	4.00	1	1	23.0000	S	Second	child
751	1	3	male	6.00	0	1	12.4750	S	Third	child
752	0	3	male	33.00	0	0	9.5000	S	Third	man
753	0	3	male	23.00	0	0	7.8958	S	Third	man
754	1	2	female	48.00	1	2	65.0000	S	Second	woman
755	1	2	male	0.67	1	1	14.5000	S	Second	child
756	0	3	male	28.00	0	0	7.7958	S	Third	man
757	0	2	male	18.00	0	0	11.5000	S	Second	man
758	0	3	male	34.00	0	0	8.0500	S	Third	man
759	1	1	female	33.00	0	0	86.5000	S	First	woman
760	0	3	male	NaN	0	0	14.5000	S	Third	man
761	0	3	male	41.00	0	0	7.1250	S	Third	man
762	1	3	male	20.00	0	0	7.2292	C	Third	man
763	1	1	female	36.00	1	2	120.0000	S	First	woman
764	0	3	male	16.00	0	0	7.7750	S	Third	man
765	1	1	female	51.00	1	0	77.9583	S	First	woman
766	0	1	male	NaN	0	0	39.6000	C	First	man
767	0	3	female	30.50	0	0	7.7500	Q	Third	woman
768	0	3	male	NaN	1	0	24.1500	Q	Third	man
769	0	3	male	32.00	0	0	8.3625	S	Third	man
770	0	3	male	24.00	0	0	9.5000	S	Third	man
771	0	3	male	48.00	0	0	7.8542	S	Third	man
772	0	2	female	57.00	0	0	10.5000	S	Second	woman
773	0	3	male	NaN	0	0	7.2250	C	Third	man
774	1	2	female	54.00	1	3	23.0000	S	Second	woman
775	0	3	male	18.00	0	0	7.7500	S	Third	man
776	0	3	male	NaN	0	0	7.7500	Q	Third	man

777	1	3	female	5.00	0	0	12.4750	S	Third	child
778	0	3	male	NaN	0	0	7.7375	Q	Third	man
779	1	1	female	43.00	0	1	211.3375	S	First	woman
780	1	3	female	13.00	0	0	7.2292	C	Third	child
781	1	1	female	17.00	1	0	57.0000	S	First	woman
782	0	1	male	29.00	0	0	30.0000	S	First	man
783	0	3	male	NaN	1	2	23.4500	S	Third	man
784	0	3	male	25.00	0	0	7.0500	S	Third	man
785	0	3	male	25.00	0	0	7.2500	S	Third	man
786	1	3	female	18.00	0	0	7.4958	S	Third	woman
787	0	3	male	8.00	4	1	29.1250	Q	Third	child
788	1	3	male	1.00	1	2	20.5750	S	Third	child
789	0	1	male	46.00	0	0	79.2000	C	First	man
790	0	3	male	NaN	0	0	7.7500	Q	Third	man
791	0	2	male	16.00	0	0	26.0000	S	Second	man
792	0	3	female	NaN	8	2	69.5500	S	Third	woman
793	0	1	male	NaN	0	0	30.6958	C	First	man
794	0	3	male	25.00	0	0	7.8958	S	Third	man
795	0	2	male	39.00	0	0	13.0000	S	Second	man
796	1	1	female	49.00	0	0	25.9292	S	First	woman
797	1	3	female	31.00	0	0	8.6833	S	Third	woman
798	0	3	male	30.00	0	0	7.2292	C	Third	man
799	0	3	female	30.00	1	1	24.1500	S	Third	woman
800	0	2	male	34.00	0	0	13.0000	S	Second	man
801	1	2	female	31.00	1	1	26.2500	S	Second	woman
802	1	1	male	11.00	1	2	120.0000	S	First	child
803	1	3	male	0.42	0	1	8.5167	C	Third	child
804	1	3	male	27.00	0	0	6.9750	S	Third	man
805	0	3	male	31.00	0	0	7.7750	S	Third	man
806	0	1	male	39.00	0	0	0.0000	S	First	man
807	0	3	female	18.00	0	0	7.7750	S	Third	woman
808	0	2	male	39.00	0	0	13.0000	S	Second	man
809	1	1	female	33.00	1	0	53.1000	S	First	woman
810	0	3	male	26.00	0	0	7.8875	S	Third	man
811	0	3	male	39.00	0	0	24.1500	S	Third	man
812	0	2	male	35.00	0	0	10.5000	S	Second	man
813	0	3	female	6.00	4	2	31.2750	S	Third	child
814	0	3	male	30.50	0	0	8.0500	S	Third	man
815	0	1	male	NaN	0	0	0.0000	S	First	man

816	0	3	female	23.00	0	0	7.9250	S	Third	woman
817	0	2	male	31.00	1	1	37.0042	C	Second	man
818	0	3	male	43.00	0	0	6.4500	S	Third	man
819	0	3	male	10.00	3	2	27.9000	S	Third	child
820	1	1	female	52.00	1	1	93.5000	S	First	woman
821	1	3	male	27.00	0	0	8.6625	S	Third	man
822	0	1	male	38.00	0	0	0.0000	S	First	man
823	1	3	female	27.00	0	1	12.4750	S	Third	woman
824	0	3	male	2.00	4	1	39.6875	S	Third	child
825	0	3	male	NaN	0	0	6.9500	Q	Third	man
826	0	3	male	NaN	0	0	56.4958	S	Third	man
827	1	2	male	1.00	0	2	37.0042	C	Second	child
828	1	3	male	NaN	0	0	7.7500	Q	Third	man
829	1	1	female	62.00	0	0	80.0000	NaN	First	woman
830	1	3	female	15.00	1	0	14.4542	C	Third	child
831	1	2	male	0.83	1	1	18.7500	S	Second	child
832	0	3	male	NaN	0	0	7.2292	C	Third	man
833	0	3	male	23.00	0	0	7.8542	S	Third	man
834	0	3	male	18.00	0	0	8.3000	S	Third	man
835	1	1	female	39.00	1	1	83.1583	C	First	woman
836	0	3	male	21.00	0	0	8.6625	S	Third	man
837	0	3	male	NaN	0	0	8.0500	S	Third	man
838	1	3	male	32.00	0	0	56.4958	S	Third	man
839	1	1	male	NaN	0	0	29.7000	C	First	man
840	0	3	male	20.00	0	0	7.9250	S	Third	man
841	0	2	male	16.00	0	0	10.5000	S	Second	man
842	1	1	female	30.00	0	0	31.0000	C	First	woman
843	0	3	male	34.50	0	0	6.4375	C	Third	man
844	0	3	male	17.00	0	0	8.6625	S	Third	man
845	0	3	male	42.00	0	0	7.5500	S	Third	man
846	0	3	male	NaN	8	2	69.5500	S	Third	man
847	0	3	male	35.00	0	0	7.8958	C	Third	man
848	0	2	male	28.00	0	1	33.0000	S	Second	man
849	1	1	female	NaN	1	0	89.1042	C	First	woman
850	0	3	male	4.00	4	2	31.2750	S	Third	child
851	0	3	male	74.00	0	0	7.7750	S	Third	man
852	0	3	female	9.00	1	1	15.2458	C	Third	child
853	1	1	female	16.00	0	1	39.4000	S	First	woman
854	0	2	female	44.00	1	0	26.0000	S	Second	woman

855	1	3	female	18.00	0	1	9.3500	S	Third	woman
856	1	1	female	45.00	1	1	164.8667	S	First	woman
857	1	1	male	51.00	0	0	26.5500	S	First	man
858	1	3	female	24.00	0	3	19.2583	C	Third	woman
859	0	3	male	NaN	0	0	7.2292	C	Third	man
860	0	3	male	41.00	2	0	14.1083	S	Third	man
861	0	2	male	21.00	1	0	11.5000	S	Second	man
862	1	1	female	48.00	0	0	25.9292	S	First	woman
863	0	3	female	NaN	8	2	69.5500	S	Third	woman
864	0	2	male	24.00	0	0	13.0000	S	Second	man
865	1	2	female	42.00	0	0	13.0000	S	Second	woman
866	1	2	female	27.00	1	0	13.8583	C	Second	woman
867	0	1	male	31.00	0	0	50.4958	S	First	man
868	0	3	male	NaN	0	0	9.5000	S	Third	man
869	1	3	male	4.00	1	1	11.1333	S	Third	child
870	0	3	male	26.00	0	0	7.8958	S	Third	man
871	1	1	female	47.00	1	1	52.5542	S	First	woman
872	0	1	male	33.00	0	0	5.0000	S	First	man
873	0	3	male	47.00	0	0	9.0000	S	Third	man
874	1	2	female	28.00	1	0	24.0000	C	Second	woman
875	1	3	female	15.00	0	0	7.2250	C	Third	child
876	0	3	male	20.00	0	0	9.8458	S	Third	man
877	0	3	male	19.00	0	0	7.8958	S	Third	man
878	0	3	male	NaN	0	0	7.8958	S	Third	man
879	1	1	female	56.00	0	1	83.1583	C	First	woman
880	1	2	female	25.00	0	1	26.0000	S	Second	woman
881	0	3	male	33.00	0	0	7.8958	S	Third	man
882	0	3	female	22.00	0	0	10.5167	S	Third	woman
883	0	2	male	28.00	0	0	10.5000	S	Second	man
884	0	3	male	25.00	0	0	7.0500	S	Third	man
885	0	3	female	39.00	0	5	29.1250	Q	Third	woman
886	0	2	male	27.00	0	0	13.0000	S	Second	man
887	1	1	female	19.00	0	0	30.0000	S	First	woman
888	0	3	female	NaN	1	2	23.4500	S	Third	woman
889	1	1	male	26.00	0	0	30.0000	C	First	man
890	0	3	male	32.00	0	0	7.7500	Q	Third	man

In [130]:

```
titanic_df = titanic_df.drop(columns=["embarked", "class", "who", "adult_male"])
titanic_df
```

Out[130...]

	survived	pclass	age	sibsp	parch	fare
sex						
male	0	3	22.00	1	0	7.2500
female	1	1	38.00	1	0	71.2833
female	1	3	26.00	0	0	7.9250
female	1	1	35.00	1	0	53.1000
male	0	3	35.00	0	0	8.0500
male	0	3	NaN	0	0	8.4583
male	0	1	54.00	0	0	51.8625
male	0	3	2.00	3	1	21.0750
female	1	3	27.00	0	2	11.1333
female	1	2	14.00	1	0	30.0708
female	1	3	4.00	1	1	16.7000
female	1	1	58.00	0	0	26.5500
male	0	3	20.00	0	0	8.0500
male	0	3	39.00	1	5	31.2750
female	0	3	14.00	0	0	7.8542
female	1	2	55.00	0	0	16.0000
male	0	3	2.00	4	1	29.1250
male	1	2	NaN	0	0	13.0000
female	0	3	31.00	1	0	18.0000
female	1	3	NaN	0	0	7.2250
male	0	2	35.00	0	0	26.0000
male	1	2	34.00	0	0	13.0000
female	1	3	15.00	0	0	8.0292
male	1	1	28.00	0	0	35.5000
female	0	3	8.00	3	1	21.0750
female	1	3	38.00	1	5	31.3875
male	0	3	NaN	0	0	7.2250
male	0	1	19.00	3	2	263.0000
female	1	3	NaN	0	0	7.8792
male	0	3	NaN	0	0	7.8958
male	0	1	40.00	0	0	27.7208
female	1	1	NaN	1	0	146.5208
female	1	3	NaN	0	0	7.7500
male	0	2	66.00	0	0	10.5000
male	0	1	28.00	1	0	82.1708
male	0	1	42.00	1	0	52.0000
male	1	3	NaN	0	0	7.2292

male	0	3	21.00	0	0	8.0500
female	0	3	18.00	2	0	18.0000
female	1	3	14.00	1	0	11.2417
female	0	3	40.00	1	0	9.4750
female	0	2	27.00	1	0	21.0000
male	0	3	NaN	0	0	7.8958
female	1	2	3.00	1	2	41.5792
female	1	3	19.00	0	0	7.8792
male	0	3	NaN	0	0	8.0500
male	0	3	NaN	1	0	15.5000
female	1	3	NaN	0	0	7.7500
male	0	3	NaN	2	0	21.6792
female	0	3	18.00	1	0	17.8000
male	0	3	7.00	4	1	39.6875
male	0	3	21.00	0	0	7.8000
female	1	1	49.00	1	0	76.7292
female	1	2	29.00	1	0	26.0000
male	0	1	65.00	0	1	61.9792
male	1	1	NaN	0	0	35.5000
female	1	2	21.00	0	0	10.5000
male	0	3	28.50	0	0	7.2292
female	1	2	5.00	1	2	27.7500
male	0	3	11.00	5	2	46.9000
male	0	3	22.00	0	0	7.2292
female	1	1	38.00	0	0	80.0000
male	0	1	45.00	1	0	83.4750
male	0	3	4.00	3	2	27.9000
male	0	1	NaN	0	0	27.7208
male	1	3	NaN	1	1	15.2458
female	1	2	29.00	0	0	10.5000
male	0	3	19.00	0	0	8.1583
female	1	3	17.00	4	2	7.9250
male	0	3	26.00	2	0	8.6625
male	0	2	32.00	0	0	10.5000
female	0	3	16.00	5	2	46.9000
male	0	2	21.00	0	0	73.5000
male	0	3	26.00	1	0	14.4542
male	1	3	32.00	0	0	56.4958
male	0	3	25.00	0	0	7.6500

male	0	3	NaN	0	0	7.8958
male	0	3	NaN	0	0	8.0500
male	1	2	0.83	0	2	29.0000
female	1	3	30.00	0	0	12.4750
male	0	3	22.00	0	0	9.0000
male	1	3	29.00	0	0	9.5000
female	1	3	NaN	0	0	7.7875
male	0	1	28.00	0	0	47.1000
female	1	2	17.00	0	0	10.5000
female	1	3	33.00	3	0	15.8500
male	0	3	16.00	1	3	34.3750
male	0	3	NaN	0	0	8.0500
female	1	1	23.00	3	2	263.0000
male	0	3	24.00	0	0	8.0500
male	0	3	29.00	0	0	8.0500
male	0	3	20.00	0	0	7.8542
male	0	1	46.00	1	0	61.1750
male	0	3	26.00	1	2	20.5750
male	0	3	59.00	0	0	7.2500
male	0	3	NaN	0	0	8.0500
male	0	1	71.00	0	0	34.6542
male	1	1	23.00	0	1	63.3583
female	1	2	34.00	0	1	23.0000
male	0	2	34.00	1	0	26.0000
female	0	3	28.00	0	0	7.8958
male	0	3	NaN	0	0	7.8958
male	0	1	21.00	0	1	77.2875
male	0	3	33.00	0	0	8.6542
male	0	3	37.00	2	0	7.9250
male	0	3	28.00	0	0	7.8958
female	1	3	21.00	0	0	7.6500
male	1	3	NaN	0	0	7.7750
male	0	3	38.00	0	0	7.8958
female	1	3	NaN	1	0	24.1500
male	0	1	47.00	0	0	52.0000
female	0	3	14.50	1	0	14.4542
male	0	3	22.00	0	0	8.0500
female	0	3	20.00	1	0	9.8250
female	0	3	17.00	0	0	14.4583

male	0	3	21.00	0	0	7.9250
male	0	3	70.50	0	0	7.7500
male	0	2	29.00	1	0	21.0000
male	0	1	24.00	0	1	247.5208
female	0	3	2.00	4	2	31.2750
male	0	2	21.00	2	0	73.5000
male	0	3	NaN	0	0	8.0500
male	0	2	32.50	1	0	30.0708
female	1	2	32.50	0	0	13.0000
male	0	1	54.00	0	1	77.2875
male	1	3	12.00	1	0	11.2417
male	0	3	NaN	0	0	7.7500
male	1	3	24.00	0	0	7.1417
female	1	3	NaN	1	1	22.3583
male	0	3	45.00	0	0	6.9750
male	0	3	33.00	0	0	7.8958
male	0	3	20.00	0	0	7.0500
female	0	3	47.00	1	0	14.5000
female	1	2	29.00	1	0	26.0000
male	0	2	25.00	0	0	13.0000
male	0	2	23.00	0	0	15.0458
female	1	1	19.00	0	2	26.2833
male	0	1	37.00	1	0	53.1000
male	0	3	16.00	0	0	9.2167
male	0	1	24.00	0	0	79.2000
female	0	3	NaN	0	2	15.2458
female	1	3	22.00	0	0	7.7500
female	1	3	24.00	1	0	15.8500
male	0	3	19.00	0	0	6.7500
male	0	2	18.00	0	0	11.5000
male	0	2	19.00	1	1	36.7500
male	1	3	27.00	0	0	7.7958
female	0	3	9.00	2	2	34.3750
male	0	2	36.50	0	2	26.0000
male	0	2	42.00	0	0	13.0000
male	0	2	51.00	0	0	12.5250
female	1	1	22.00	1	0	66.6000
male	0	3	55.50	0	0	8.0500
male	0	3	40.50	0	2	14.5000

male	0	3	NaN	0	0	7.3125
male	0	1	51.00	0	1	61.3792
female	1	3	16.00	0	0	7.7333
male	0	3	30.00	0	0	8.0500
male	0	3	NaN	0	0	8.6625
male	0	3	NaN	8	2	69.5500
male	0	3	44.00	0	1	16.1000
female	1	2	40.00	0	0	15.7500
male	0	3	26.00	0	0	7.7750
male	0	3	17.00	0	0	8.6625
male	0	3	1.00	4	1	39.6875
male	1	3	9.00	0	2	20.5250
female	1	1	NaN	0	1	55.0000
female	0	3	45.00	1	4	27.9000
male	0	1	NaN	0	0	25.9250
male	0	3	28.00	0	0	56.4958
male	0	1	61.00	0	0	33.5000
male	0	3	4.00	4	1	29.1250
female	1	3	1.00	1	1	11.1333
male	0	3	21.00	0	0	7.9250
male	0	1	56.00	0	0	30.6958
male	0	3	18.00	1	1	7.8542
male	0	3	NaN	3	1	25.4667
female	0	1	50.00	0	0	28.7125
male	0	2	30.00	0	0	13.0000
male	0	3	36.00	0	0	0.0000
female	0	3	NaN	8	2	69.5500
male	0	2	NaN	0	0	15.0500
male	0	3	9.00	4	2	31.3875
male	1	2	1.00	2	1	39.0000
female	1	3	4.00	0	2	22.0250
male	0	1	NaN	0	0	50.0000
female	1	3	NaN	1	0	15.5000
male	1	1	45.00	0	0	26.5500
male	0	3	40.00	1	1	15.5000
male	0	3	36.00	0	0	7.8958
female	1	2	32.00	0	0	13.0000
male	0	2	19.00	0	0	13.0000
female	1	3	19.00	1	0	7.8542

<b>male</b>	1	2	3.00	1	1	26.0000
<b>female</b>	1	1	44.00	0	0	27.7208
<b>female</b>	1	1	58.00	0	0	146.5208
<b>male</b>	0	3	NaN	0	0	7.7500
<b>male</b>	0	3	42.00	0	1	8.4042
<b>female</b>	1	3	NaN	0	0	7.7500
<b>female</b>	0	2	24.00	0	0	13.0000
<b>male</b>	0	3	28.00	0	0	9.5000
<b>male</b>	0	3	NaN	8	2	69.5500
<b>male</b>	0	3	34.00	0	0	6.4958
<b>male</b>	0	3	45.50	0	0	7.2250
<b>male</b>	1	3	18.00	0	0	8.0500
<b>female</b>	0	3	2.00	0	1	10.4625
<b>male</b>	0	3	32.00	1	0	15.8500
<b>male</b>	1	3	26.00	0	0	18.7875
<b>female</b>	1	3	16.00	0	0	7.7500
<b>male</b>	1	1	40.00	0	0	31.0000
<b>male</b>	0	3	24.00	0	0	7.0500
<b>female</b>	1	2	35.00	0	0	21.0000
<b>male</b>	0	3	22.00	0	0	7.2500
<b>male</b>	0	2	30.00	0	0	13.0000
<b>male</b>	0	3	NaN	1	0	7.7500
<b>female</b>	1	1	31.00	1	0	113.2750
<b>female</b>	1	3	27.00	0	0	7.9250
<b>male</b>	0	2	42.00	1	0	27.0000
<b>female</b>	1	1	32.00	0	0	76.2917
<b>male</b>	0	2	30.00	0	0	10.5000
<b>male</b>	1	3	16.00	0	0	8.0500
<b>male</b>	0	2	27.00	0	0	13.0000
<b>male</b>	0	3	51.00	0	0	8.0500
<b>male</b>	0	3	NaN	0	0	7.8958
<b>male</b>	1	1	38.00	1	0	90.0000
<b>male</b>	0	3	22.00	0	0	9.3500
<b>male</b>	1	2	19.00	0	0	10.5000
<b>male</b>	0	3	20.50	0	0	7.2500
<b>male</b>	0	2	18.00	0	0	13.0000
<b>female</b>	0	3	NaN	3	1	25.4667
<b>female</b>	1	1	35.00	1	0	83.4750
<b>male</b>	0	3	29.00	0	0	7.7750

male	0	2	59.00	0	0	13.5000
female	1	3	5.00	4	2	31.3875
male	0	2	24.00	0	0	10.5000
female	0	3	NaN	0	0	7.5500
male	0	2	44.00	1	0	26.0000
female	1	2	8.00	0	2	26.2500
male	0	2	19.00	0	0	10.5000
male	0	2	33.00	0	0	12.2750
female	0	3	NaN	1	0	14.4542
female	1	3	NaN	1	0	15.5000
male	0	2	29.00	0	0	10.5000
male	0	3	22.00	0	0	7.1250
male	0	3	30.00	0	0	7.2250
male	0	1	44.00	2	0	90.0000
female	0	3	25.00	0	0	7.7750
female	1	2	24.00	0	2	14.5000
male	1	1	37.00	1	1	52.5542
male	0	2	54.00	1	0	26.0000
male	0	3	NaN	0	0	7.2500
female	0	3	29.00	1	1	10.4625
male	0	1	62.00	0	0	26.5500
male	0	3	30.00	1	0	16.1000
female	0	3	41.00	0	2	20.2125
female	1	3	29.00	0	2	15.2458
female	1	1	NaN	0	0	79.2000
female	1	1	30.00	0	0	86.5000
female	1	1	35.00	0	0	512.3292
female	1	2	50.00	0	1	26.0000
male	0	3	NaN	0	0	7.7500
male	1	3	3.00	4	2	31.3875
male	0	1	52.00	1	1	79.6500
male	0	1	40.00	0	0	0.0000
female	0	3	NaN	0	0	7.7500
male	0	2	36.00	0	0	10.5000
male	0	3	16.00	4	1	39.6875
male	1	3	25.00	1	0	7.7750
female	1	1	58.00	0	1	153.4625
female	1	1	35.00	0	0	135.6333
male	0	1	NaN	0	0	31.0000

<b>male</b>	1	3	25.00	0	0	0.0000
<b>female</b>	1	2	41.00	0	1	19.5000
<b>male</b>	0	1	37.00	0	1	29.7000
<b>female</b>	1	3	Nan	0	0	7.7500
<b>female</b>	1	1	63.00	1	0	77.9583
<b>female</b>	0	3	45.00	0	0	7.7500
<b>male</b>	0	2	Nan	0	0	0.0000
<b>male</b>	0	3	7.00	4	1	29.1250
<b>female</b>	1	3	35.00	1	1	20.2500
<b>male</b>	0	3	65.00	0	0	7.7500
<b>male</b>	0	3	28.00	0	0	7.8542
<b>male</b>	0	3	16.00	0	0	9.5000
<b>male</b>	1	3	19.00	0	0	8.0500
<b>male</b>	0	1	Nan	0	0	26.0000
<b>male</b>	0	3	33.00	0	0	8.6625
<b>male</b>	1	3	30.00	0	0	9.5000
<b>male</b>	0	3	22.00	0	0	7.8958
<b>male</b>	1	2	42.00	0	0	13.0000
<b>female</b>	1	3	22.00	0	0	7.7500
<b>female</b>	1	1	26.00	0	0	78.8500
<b>female</b>	1	1	19.00	1	0	91.0792
<b>male</b>	0	2	36.00	0	0	12.8750
<b>female</b>	0	3	24.00	0	0	8.8500
<b>male</b>	0	3	24.00	0	0	7.8958
<b>male</b>	0	1	Nan	0	0	27.7208
<b>male</b>	0	3	23.50	0	0	7.2292
<b>female</b>	0	1	2.00	1	2	151.5500
<b>male</b>	1	1	Nan	0	0	30.5000
<b>female</b>	1	1	50.00	0	1	247.5208
<b>female</b>	1	3	Nan	0	0	7.7500
<b>male</b>	1	3	Nan	2	0	23.2500
<b>male</b>	0	3	19.00	0	0	0.0000
<b>female</b>	1	2	Nan	0	0	12.3500
<b>male</b>	0	3	Nan	0	0	8.0500
<b>male</b>	1	1	0.92	1	2	151.5500
<b>female</b>	1	1	Nan	0	0	110.8833
<b>female</b>	1	1	17.00	1	0	108.9000
<b>male</b>	0	2	30.00	1	0	24.0000
<b>female</b>	1	1	30.00	0	0	56.9292

female	1	1	24.00	0	0	83.1583
female	1	1	18.00	2	2	262.3750
female	0	2	26.00	1	1	26.0000
male	0	3	28.00	0	0	7.8958
male	0	2	43.00	1	1	26.2500
female	1	3	26.00	0	0	7.8542
female	1	2	24.00	1	0	26.0000
male	0	2	54.00	0	0	14.0000
female	1	1	31.00	0	2	164.8667
female	1	1	40.00	1	1	134.5000
male	0	3	22.00	0	0	7.2500
male	0	3	27.00	0	0	7.8958
female	1	2	30.00	0	0	12.3500
female	1	2	22.00	1	1	29.0000
male	0	3	NaN	8	2	69.5500
female	1	1	36.00	0	0	135.6333
male	0	3	61.00	0	0	6.2375
female	1	2	36.00	0	0	13.0000
female	1	3	31.00	1	1	20.5250
female	1	1	16.00	0	1	57.9792
female	1	3	NaN	2	0	23.2500
male	0	1	45.50	0	0	28.5000
male	0	1	38.00	0	1	153.4625
male	0	3	16.00	2	0	18.0000
female	1	1	NaN	1	0	133.6500
male	0	3	NaN	0	0	7.8958
male	0	1	29.00	1	0	66.6000
female	1	1	41.00	0	0	134.5000
male	1	3	45.00	0	0	8.0500
male	0	1	45.00	0	0	35.5000
male	1	2	2.00	1	1	26.0000
female	1	1	24.00	3	2	263.0000
male	0	2	28.00	0	0	13.0000
male	0	2	25.00	0	0	13.0000
male	0	2	36.00	0	0	13.0000
female	1	2	24.00	0	0	13.0000
female	1	2	40.00	0	0	13.0000
female	1	3	NaN	1	0	16.1000
male	1	3	3.00	1	1	15.9000

male	0	3	42.00	0	0	8.6625
male	0	3	23.00	0	0	9.2250
male	0	1	NaN	0	0	35.0000
male	0	3	15.00	1	1	7.2292
male	0	3	25.00	1	0	17.8000
male	0	3	NaN	0	0	7.2250
male	0	3	28.00	0	0	9.5000
female	1	1	22.00	0	1	55.0000
female	0	2	38.00	0	0	13.0000
female	1	3	NaN	0	0	7.8792
female	1	3	NaN	0	0	7.8792
male	0	3	40.00	1	4	27.9000
male	0	2	29.00	1	0	27.7208
female	0	3	45.00	0	1	14.4542
male	0	3	35.00	0	0	7.0500
male	0	3	NaN	1	0	15.5000
male	0	3	30.00	0	0	7.2500
female	1	1	60.00	1	0	75.2500
female	1	3	NaN	0	0	7.2292
female	1	3	NaN	0	0	7.7500
female	1	1	24.00	0	0	69.3000
male	1	1	25.00	1	0	55.4417
male	0	3	18.00	1	0	6.4958
male	0	3	19.00	0	0	8.0500
male	0	1	22.00	0	0	135.6333
female	0	3	3.00	3	1	21.0750
female	1	1	NaN	1	0	82.1708
female	1	3	22.00	0	0	7.2500
male	0	1	27.00	0	2	211.5000
male	0	3	20.00	0	0	4.0125
male	0	3	19.00	0	0	7.7750
female	1	1	42.00	0	0	227.5250
female	1	3	1.00	0	2	15.7417
male	0	3	32.00	0	0	7.9250
female	1	1	35.00	1	0	52.0000
male	0	3	NaN	0	0	7.8958
male	0	2	18.00	0	0	73.5000
male	0	3	1.00	5	2	46.9000
female	1	2	36.00	0	0	13.0000

male	0	3	NaN	0	0	7.7292
female	1	2	17.00	0	0	12.0000
male	1	1	36.00	1	2	120.0000
male	1	3	21.00	0	0	7.7958
male	0	3	28.00	2	0	7.9250
female	1	1	23.00	1	0	113.2750
female	1	3	24.00	0	2	16.7000
male	0	3	22.00	0	0	7.7958
female	0	3	31.00	0	0	7.8542
male	0	2	46.00	0	0	26.0000
male	0	2	23.00	0	0	10.5000
female	1	2	28.00	0	0	12.6500
male	1	3	39.00	0	0	7.9250
male	0	3	26.00	0	0	8.0500
female	0	3	21.00	1	0	9.8250
male	0	3	28.00	1	0	15.8500
female	0	3	20.00	0	0	8.6625
male	0	2	34.00	1	0	21.0000
male	0	3	51.00	0	0	7.7500
male	1	2	3.00	1	1	18.7500
male	0	3	21.00	0	0	7.7750
female	0	3	NaN	3	1	25.4667
male	0	3	NaN	0	0	7.8958
male	0	3	NaN	0	0	6.8583
female	1	1	33.00	1	0	90.0000
male	0	2	NaN	0	0	0.0000
male	1	3	44.00	0	0	7.9250
female	0	3	NaN	0	0	8.0500
female	1	2	34.00	1	1	32.5000
female	1	2	18.00	0	2	13.0000
male	0	2	30.00	0	0	13.0000
female	0	3	10.00	0	2	24.1500
male	0	3	NaN	0	0	7.8958
male	0	3	21.00	0	0	7.7333
male	0	3	29.00	0	0	7.8750
female	0	3	28.00	1	1	14.4000
male	0	3	18.00	1	1	20.2125
male	0	3	NaN	0	0	7.2500
female	1	2	28.00	1	0	26.0000

female	1	2	19.00	0	0	26.0000
male	0	3	NaN	0	0	7.7500
male	1	3	32.00	0	0	8.0500
male	1	1	28.00	0	0	26.5500
female	1	3	NaN	1	0	16.1000
female	1	2	42.00	1	0	26.0000
male	0	3	17.00	0	0	7.1250
male	0	1	50.00	1	0	55.9000
female	1	1	14.00	1	2	120.0000
female	0	3	21.00	2	2	34.3750
female	1	2	24.00	2	3	18.7500
male	0	1	64.00	1	4	263.0000
male	0	2	31.00	0	0	10.5000
female	1	2	45.00	1	1	26.2500
male	0	3	20.00	0	0	9.5000
male	0	3	25.00	1	0	7.7750
female	1	2	28.00	0	0	13.0000
male	1	3	NaN	0	0	8.1125
male	1	1	4.00	0	2	81.8583
female	1	2	13.00	0	1	19.5000
male	1	1	34.00	0	0	26.5500
female	1	3	5.00	2	1	19.2583
male	1	1	52.00	0	0	30.5000
male	0	2	36.00	1	2	27.7500
male	0	3	NaN	1	0	19.9667
male	0	1	30.00	0	0	27.7500
male	1	1	49.00	1	0	89.1042
male	0	3	NaN	0	0	8.0500
male	1	3	29.00	0	0	7.8958
male	0	1	65.00	0	0	26.5500
female	1	1	NaN	1	0	51.8625
female	1	2	50.00	0	0	10.5000
male	0	3	NaN	0	0	7.7500
male	1	1	48.00	0	0	26.5500
male	0	3	34.00	0	0	8.0500
male	0	1	47.00	0	0	38.5000
male	0	2	48.00	0	0	13.0000
male	0	3	NaN	0	0	8.0500
male	0	3	38.00	0	0	7.0500

male	0	2	NaN	0	0	0.0000
male	0	1	56.00	0	0	26.5500
male	0	3	NaN	0	0	7.7250
female	1	3	0.75	2	1	19.2583
male	0	3	NaN	0	0	7.2500
male	0	3	38.00	0	0	8.6625
female	1	2	33.00	1	2	27.7500
female	1	2	23.00	0	0	13.7917
female	0	3	22.00	0	0	9.8375
male	0	1	NaN	0	0	52.0000
male	0	2	34.00	1	0	21.0000
male	0	3	29.00	1	0	7.0458
male	0	3	22.00	0	0	7.5208
female	1	3	2.00	0	1	12.2875
male	0	3	9.00	5	2	46.9000
male	0	2	NaN	0	0	0.0000
male	0	3	50.00	0	0	8.0500
female	1	3	63.00	0	0	9.5875
male	1	1	25.00	1	0	91.0792
female	0	3	NaN	3	1	25.4667
female	1	1	35.00	1	0	90.0000
male	0	1	58.00	0	0	29.7000
male	0	3	30.00	0	0	8.0500
male	1	3	9.00	1	1	15.9000
male	0	3	NaN	1	0	19.9667
male	0	3	21.00	0	0	7.2500
male	0	1	55.00	0	0	30.5000
male	0	1	71.00	0	0	49.5042
male	0	3	21.00	0	0	8.0500
male	0	3	NaN	0	0	14.4583
female	1	1	54.00	1	0	78.2667
male	0	3	NaN	0	0	15.1000
female	0	1	25.00	1	2	151.5500
male	0	3	24.00	0	0	7.7958
male	0	3	17.00	0	0	8.6625
female	0	3	21.00	0	0	7.7500
female	0	3	NaN	0	0	7.6292
female	0	3	37.00	0	0	9.5875
female	1	1	16.00	0	0	86.5000

<b>male</b>	0	1	18.00	1	0	108.9000
<b>female</b>	1	2	33.00	0	2	26.0000
<b>male</b>	1	1	NaN	0	0	26.5500
<b>male</b>	0	3	28.00	0	0	22.5250
<b>male</b>	1	3	26.00	0	0	56.4958
<b>male</b>	1	3	29.00	0	0	7.7500
<b>male</b>	0	3	NaN	0	0	8.0500
<b>male</b>	1	1	36.00	0	0	26.2875
<b>female</b>	1	1	54.00	1	0	59.4000
<b>male</b>	0	3	24.00	0	0	7.4958
<b>male</b>	0	1	47.00	0	0	34.0208
<b>female</b>	1	2	34.00	0	0	10.5000
<b>male</b>	0	3	NaN	0	0	24.1500
<b>female</b>	1	2	36.00	1	0	26.0000
<b>male</b>	0	3	32.00	0	0	7.8958
<b>female</b>	1	1	30.00	0	0	93.5000
<b>male</b>	0	3	22.00	0	0	7.8958
<b>male</b>	0	3	NaN	0	0	7.2250
<b>female</b>	1	1	44.00	0	1	57.9792
<b>male</b>	0	3	NaN	0	0	7.2292
<b>male</b>	0	3	40.50	0	0	7.7500
<b>female</b>	1	2	50.00	0	0	10.5000
<b>male</b>	0	1	NaN	0	0	221.7792
<b>male</b>	0	3	39.00	0	0	7.9250
<b>male</b>	0	2	23.00	2	1	11.5000
<b>female</b>	1	2	2.00	1	1	26.0000
<b>male</b>	0	3	NaN	0	0	7.2292
<b>male</b>	0	3	17.00	1	1	7.2292
<b>female</b>	1	3	NaN	0	2	22.3583
<b>female</b>	0	3	30.00	0	0	8.6625
<b>female</b>	1	2	7.00	0	2	26.2500
<b>male</b>	0	1	45.00	0	0	26.5500
<b>female</b>	1	1	30.00	0	0	106.4250
<b>male</b>	0	3	NaN	0	0	14.5000
<b>female</b>	1	1	22.00	0	2	49.5000
<b>female</b>	1	1	36.00	0	2	71.0000
<b>female</b>	0	3	9.00	4	2	31.2750
<b>female</b>	0	3	11.00	4	2	31.2750
<b>male</b>	1	2	32.00	1	0	26.0000

male	0	1	50.00	1	0	106.4250
male	0	1	64.00	0	0	26.0000
female	1	2	19.00	1	0	26.0000
male	1	2	Nan	0	0	13.8625
male	0	3	33.00	1	1	20.5250
male	1	2	8.00	1	1	36.7500
male	1	1	17.00	0	2	110.8833
male	0	2	27.00	0	0	26.0000
male	0	3	Nan	0	0	7.8292
male	1	3	22.00	0	0	7.2250
female	1	3	22.00	0	0	7.7750
male	0	1	62.00	0	0	26.5500
female	1	1	48.00	1	0	39.6000
male	0	1	Nan	0	0	227.5250
female	1	1	39.00	1	1	79.6500
female	1	3	36.00	1	0	17.4000
male	0	3	Nan	0	0	7.7500
male	0	3	40.00	0	0	7.8958
male	0	2	28.00	0	0	13.5000
male	0	3	Nan	0	0	8.0500
female	0	3	Nan	0	0	8.0500
male	0	3	24.00	2	0	24.1500
male	0	3	19.00	0	0	7.8958
female	0	3	29.00	0	4	21.0750
male	0	3	Nan	0	0	7.2292
male	1	3	32.00	0	0	7.8542
male	1	2	62.00	0	0	10.5000
female	1	1	53.00	2	0	51.4792
male	1	1	36.00	0	0	26.3875
female	1	3	Nan	0	0	7.7500
male	0	3	16.00	0	0	8.0500
male	0	3	19.00	0	0	14.5000
female	1	2	34.00	0	0	13.0000
female	1	1	39.00	1	0	55.9000
female	0	3	Nan	1	0	14.4583
male	1	3	32.00	0	0	7.9250
female	1	2	25.00	1	1	30.0000
female	1	1	39.00	1	1	110.8833
male	0	2	54.00	0	0	26.0000

male	0	1	36.00	0	0	40.1250
male	0	3	NaN	0	0	8.7125
female	1	1	18.00	0	2	79.6500
male	0	2	47.00	0	0	15.0000
male	1	1	60.00	1	1	79.2000
male	0	3	22.00	0	0	8.0500
male	0	3	NaN	0	0	8.0500
male	0	3	35.00	0	0	7.1250
female	1	1	52.00	1	0	78.2667
male	0	3	47.00	0	0	7.2500
female	0	3	NaN	0	2	7.7500
male	0	2	37.00	1	0	26.0000
male	0	3	36.00	1	1	24.1500
female	1	2	NaN	0	0	33.0000
male	0	3	49.00	0	0	0.0000
male	0	3	NaN	0	0	7.2250
male	1	1	49.00	1	0	56.9292
female	1	2	24.00	2	1	27.0000
male	0	3	NaN	0	0	7.8958
male	0	1	NaN	0	0	42.4000
male	0	3	44.00	0	0	8.0500
male	1	1	35.00	0	0	26.5500
male	0	3	36.00	1	0	15.5500
male	0	3	30.00	0	0	7.8958
male	1	1	27.00	0	0	30.5000
female	1	2	22.00	1	2	41.5792
female	1	1	40.00	0	0	153.4625
female	0	3	39.00	1	5	31.2750
male	0	3	NaN	0	0	7.0500
female	1	3	NaN	1	0	15.5000
male	0	3	NaN	0	0	7.7500
male	0	3	35.00	0	0	8.0500
female	1	2	24.00	1	2	65.0000
male	0	3	34.00	1	1	14.4000
female	0	3	26.00	1	0	16.1000
female	1	2	4.00	2	1	39.0000
male	0	2	26.00	0	0	10.5000
male	0	3	27.00	1	0	14.4542
male	1	1	42.00	1	0	52.5542

male	1	3	20.00	1	1	15.7417
male	0	3	21.00	0	0	7.8542
male	0	3	21.00	0	0	16.1000
male	0	1	61.00	0	0	32.3208
male	0	2	57.00	0	0	12.3500
female	1	1	21.00	0	0	77.9583
male	0	3	26.00	0	0	7.8958
male	0	3	NaN	0	0	7.7333
male	1	1	80.00	0	0	30.0000
male	0	3	51.00	0	0	7.0542
male	1	1	32.00	0	0	30.5000
male	0	1	NaN	0	0	0.0000
female	0	3	9.00	3	2	27.9000
female	1	2	28.00	0	0	13.0000
male	0	3	32.00	0	0	7.9250
male	0	2	31.00	1	1	26.2500
female	0	3	41.00	0	5	39.6875
male	0	3	NaN	1	0	16.1000
male	0	3	20.00	0	0	7.8542
female	1	1	24.00	0	0	69.3000
female	0	3	2.00	3	2	27.9000
male	1	3	NaN	0	0	56.4958
female	1	3	0.75	2	1	19.2583
male	1	1	48.00	1	0	76.7292
male	0	3	19.00	0	0	7.8958
male	1	1	56.00	0	0	35.5000
male	0	3	NaN	0	0	7.5500
female	1	3	23.00	0	0	7.5500
male	0	3	NaN	0	0	7.8958
female	1	2	18.00	0	1	23.0000
male	0	3	21.00	0	0	8.4333
female	1	3	NaN	0	0	7.8292
female	0	3	18.00	0	0	6.7500
male	0	2	24.00	2	0	73.5000
male	0	3	NaN	0	0	7.8958
female	0	3	32.00	1	1	15.5000
male	0	2	23.00	0	0	13.0000
male	0	1	58.00	0	2	113.2750
male	1	1	50.00	2	0	133.6500

male	0	3	40.00	0	0	7.2250
male	0	1	47.00	0	0	25.5875
male	0	3	36.00	0	0	7.4958
male	1	3	20.00	1	0	7.9250
male	0	2	32.00	2	0	73.5000
male	0	2	25.00	0	0	13.0000
male	0	3	NaN	0	0	7.7750
male	0	3	43.00	0	0	8.0500
female	1	1	NaN	1	0	52.0000
female	1	2	40.00	1	1	39.0000
male	0	1	31.00	1	0	52.0000
male	0	2	70.00	0	0	10.5000
male	1	2	31.00	0	0	13.0000
male	0	2	NaN	0	0	0.0000
male	0	3	18.00	0	0	7.7750
male	0	3	24.50	0	0	8.0500
female	1	3	18.00	0	0	9.8417
female	0	3	43.00	1	6	46.9000
male	1	1	36.00	0	1	512.3292
female	0	3	NaN	0	0	8.1375
male	1	1	27.00	0	0	76.7292
male	0	3	20.00	0	0	9.2250
male	0	3	14.00	5	2	46.9000
male	0	2	60.00	1	1	39.0000
male	0	2	25.00	1	2	41.5792
male	0	3	14.00	4	1	39.6875
male	0	3	19.00	0	0	10.1708
male	0	3	18.00	0	0	7.7958
female	1	1	15.00	0	1	211.3375
male	1	1	31.00	1	0	57.0000
female	1	3	4.00	0	1	13.4167
male	1	3	NaN	0	0	56.4958
male	0	3	25.00	0	0	7.2250
male	0	1	60.00	0	0	26.5500
male	0	2	52.00	0	0	13.5000
male	0	3	44.00	0	0	8.0500
female	1	3	NaN	0	0	7.7333
male	0	1	49.00	1	1	110.8833
male	0	3	42.00	0	0	7.6500

female	1	1	18.00	1	0	227.5250
male	1	1	35.00	0	0	26.2875
female	0	3	18.00	0	1	14.4542
male	0	3	25.00	0	0	7.7417
male	0	3	26.00	1	0	7.8542
male	0	2	39.00	0	0	26.0000
female	1	2	45.00	0	0	13.5000
male	1	1	42.00	0	0	26.2875
female	1	1	22.00	0	0	151.5500
male	1	3	NaN	1	1	15.2458
female	1	1	24.00	0	0	49.5042
male	0	1	NaN	0	0	26.5500
male	1	1	48.00	1	0	52.0000
male	0	3	29.00	0	0	9.4833
male	0	2	52.00	0	0	13.0000
male	0	3	19.00	0	0	7.6500
female	1	1	38.00	0	0	227.5250
female	1	2	27.00	0	0	10.5000
male	0	3	NaN	0	0	15.5000
male	0	3	33.00	0	0	7.7750
female	1	2	6.00	0	1	33.0000
male	0	3	17.00	1	0	7.0542
male	0	2	34.00	0	0	13.0000
male	0	2	50.00	0	0	13.0000
male	1	1	27.00	1	0	53.1000
male	0	3	20.00	0	0	8.6625
female	1	2	30.00	3	0	21.0000
female	1	3	NaN	0	0	7.7375
male	0	2	25.00	1	0	26.0000
female	0	3	25.00	1	0	7.9250
female	1	1	29.00	0	0	211.3375
male	0	3	11.00	0	0	18.7875
male	0	2	NaN	0	0	0.0000
male	0	2	23.00	0	0	13.0000
male	0	2	23.00	0	0	13.0000
male	0	3	28.50	0	0	16.1000
female	0	3	48.00	1	3	34.3750
male	1	1	35.00	0	0	512.3292
male	0	3	NaN	0	0	7.8958

male	0	3	NaN	0	0	7.8958
male	1	1	NaN	0	0	30.0000
male	0	1	36.00	1	0	78.8500
female	1	1	21.00	2	2	262.3750
male	0	3	24.00	1	0	16.1000
male	1	3	31.00	0	0	7.9250
male	0	1	70.00	1	1	71.0000
male	0	3	16.00	1	1	20.2500
female	1	2	30.00	0	0	13.0000
male	0	1	19.00	1	0	53.1000
male	0	3	31.00	0	0	7.7500
female	1	2	4.00	1	1	23.0000
male	1	3	6.00	0	1	12.4750
male	0	3	33.00	0	0	9.5000
male	0	3	23.00	0	0	7.8958
female	1	2	48.00	1	2	65.0000
male	1	2	0.67	1	1	14.5000
male	0	3	28.00	0	0	7.7958
male	0	2	18.00	0	0	11.5000
male	0	3	34.00	0	0	8.0500
female	1	1	33.00	0	0	86.5000
male	0	3	NaN	0	0	14.5000
male	0	3	41.00	0	0	7.1250
male	1	3	20.00	0	0	7.2292
female	1	1	36.00	1	2	120.0000
male	0	3	16.00	0	0	7.7750
female	1	1	51.00	1	0	77.9583
male	0	1	NaN	0	0	39.6000
female	0	3	30.50	0	0	7.7500
male	0	3	NaN	1	0	24.1500
male	0	3	32.00	0	0	8.3625
male	0	3	24.00	0	0	9.5000
male	0	3	48.00	0	0	7.8542
female	0	2	57.00	0	0	10.5000
male	0	3	NaN	0	0	7.2250
female	1	2	54.00	1	3	23.0000
male	0	3	18.00	0	0	7.7500
male	0	3	NaN	0	0	7.7500
female	1	3	5.00	0	0	12.4750

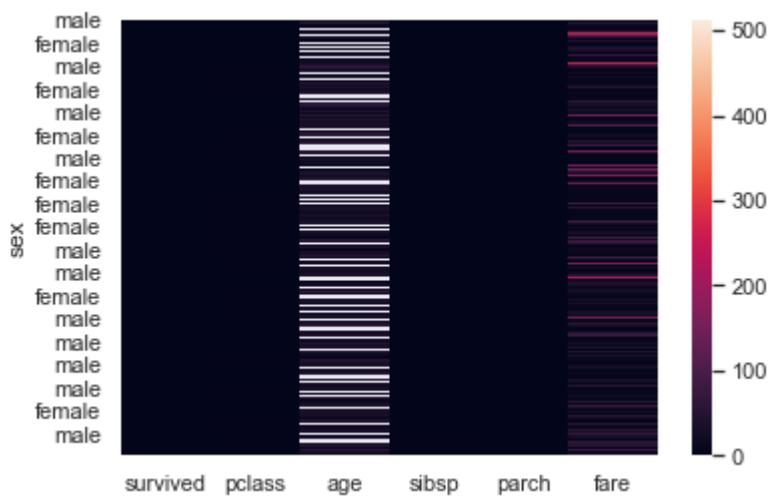
male	0	3	NaN	0	0	7.7375
female	1	1	43.00	0	1	211.3375
female	1	3	13.00	0	0	7.2292
female	1	1	17.00	1	0	57.0000
male	0	1	29.00	0	0	30.0000
male	0	3	NaN	1	2	23.4500
male	0	3	25.00	0	0	7.0500
male	0	3	25.00	0	0	7.2500
female	1	3	18.00	0	0	7.4958
male	0	3	8.00	4	1	29.1250
male	1	3	1.00	1	2	20.5750
male	0	1	46.00	0	0	79.2000
male	0	3	NaN	0	0	7.7500
male	0	2	16.00	0	0	26.0000
female	0	3	NaN	8	2	69.5500
male	0	1	NaN	0	0	30.6958
male	0	3	25.00	0	0	7.8958
male	0	2	39.00	0	0	13.0000
female	1	1	49.00	0	0	25.9292
female	1	3	31.00	0	0	8.6833
male	0	3	30.00	0	0	7.2292
female	0	3	30.00	1	1	24.1500
male	0	2	34.00	0	0	13.0000
female	1	2	31.00	1	1	26.2500
male	1	1	11.00	1	2	120.0000
male	1	3	0.42	0	1	8.5167
male	1	3	27.00	0	0	6.9750
male	0	3	31.00	0	0	7.7750
male	0	1	39.00	0	0	0.0000
female	0	3	18.00	0	0	7.7750
male	0	2	39.00	0	0	13.0000
female	1	1	33.00	1	0	53.1000
male	0	3	26.00	0	0	7.8875
male	0	3	39.00	0	0	24.1500
male	0	2	35.00	0	0	10.5000
female	0	3	6.00	4	2	31.2750
male	0	3	30.50	0	0	8.0500
male	0	1	NaN	0	0	0.0000
female	0	3	23.00	0	0	7.9250

male	0	2	31.00	1	1	37.0042
male	0	3	43.00	0	0	6.4500
male	0	3	10.00	3	2	27.9000
female	1	1	52.00	1	1	93.5000
male	1	3	27.00	0	0	8.6625
male	0	1	38.00	0	0	0.0000
female	1	3	27.00	0	1	12.4750
male	0	3	2.00	4	1	39.6875
male	0	3	NaN	0	0	6.9500
male	0	3	NaN	0	0	56.4958
male	1	2	1.00	0	2	37.0042
male	1	3	NaN	0	0	7.7500
female	1	1	62.00	0	0	80.0000
female	1	3	15.00	1	0	14.4542
male	1	2	0.83	1	1	18.7500
male	0	3	NaN	0	0	7.2292
male	0	3	23.00	0	0	7.8542
male	0	3	18.00	0	0	8.3000
female	1	1	39.00	1	1	83.1583
male	0	3	21.00	0	0	8.6625
male	0	3	NaN	0	0	8.0500
male	1	3	32.00	0	0	56.4958
male	1	1	NaN	0	0	29.7000
male	0	3	20.00	0	0	7.9250
male	0	2	16.00	0	0	10.5000
female	1	1	30.00	0	0	31.0000
male	0	3	34.50	0	0	6.4375
male	0	3	17.00	0	0	8.6625
male	0	3	42.00	0	0	7.5500
male	0	3	NaN	8	2	69.5500
male	0	3	35.00	0	0	7.8958
male	0	2	28.00	0	1	33.0000
female	1	1	NaN	1	0	89.1042
male	0	3	4.00	4	2	31.2750
male	0	3	74.00	0	0	7.7750
female	0	3	9.00	1	1	15.2458
female	1	1	16.00	0	1	39.4000
female	0	2	44.00	1	0	26.0000
female	1	3	18.00	0	1	9.3500

<b>female</b>	1	1	45.00	1	1	164.8667
<b>male</b>	1	1	51.00	0	0	26.5500
<b>female</b>	1	3	24.00	0	3	19.2583
<b>male</b>	0	3	NaN	0	0	7.2292
<b>male</b>	0	3	41.00	2	0	14.1083
<b>male</b>	0	2	21.00	1	0	11.5000
<b>female</b>	1	1	48.00	0	0	25.9292
<b>female</b>	0	3	NaN	8	2	69.5500
<b>male</b>	0	2	24.00	0	0	13.0000
<b>female</b>	1	2	42.00	0	0	13.0000
<b>female</b>	1	2	27.00	1	0	13.8583
<b>male</b>	0	1	31.00	0	0	50.4958
<b>male</b>	0	3	NaN	0	0	9.5000
<b>male</b>	1	3	4.00	1	1	11.1333
<b>male</b>	0	3	26.00	0	0	7.8958
<b>female</b>	1	1	47.00	1	1	52.5542
<b>male</b>	0	1	33.00	0	0	5.0000
<b>male</b>	0	3	47.00	0	0	9.0000
<b>female</b>	1	2	28.00	1	0	24.0000
<b>female</b>	1	3	15.00	0	0	7.2250
<b>male</b>	0	3	20.00	0	0	9.8458
<b>male</b>	0	3	19.00	0	0	7.8958
<b>male</b>	0	3	NaN	0	0	7.8958
<b>female</b>	1	1	56.00	0	1	83.1583
<b>female</b>	1	2	25.00	0	1	26.0000
<b>male</b>	0	3	33.00	0	0	7.8958
<b>female</b>	0	3	22.00	0	0	10.5167
<b>male</b>	0	2	28.00	0	0	10.5000
<b>male</b>	0	3	25.00	0	0	7.0500
<b>female</b>	0	3	39.00	0	5	29.1250
<b>male</b>	0	2	27.00	0	0	13.0000
<b>female</b>	1	1	19.00	0	0	30.0000
<b>female</b>	0	3	NaN	1	2	23.4500
<b>male</b>	1	1	26.00	0	0	30.0000
<b>male</b>	0	3	32.00	0	0	7.7500

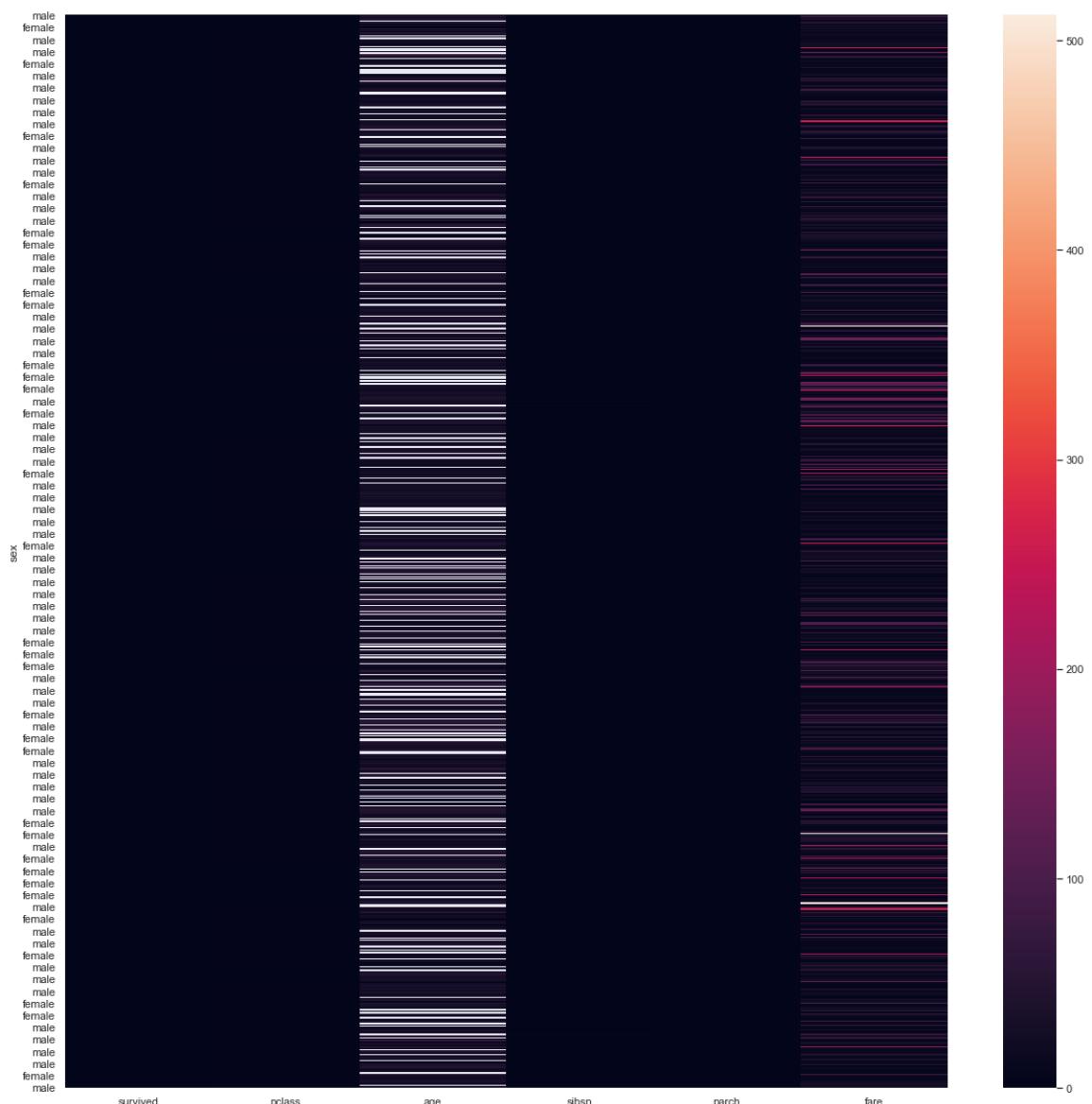
In [131...]: sns.heatmap(titanic\_df)

Out[131...]: <AxesSubplot:ylabel='sex'>



```
In [132... plt.figure(figsize=(20,20))  
sns.heatmap(titanic_df)
```

```
Out[132... <AxesSubplot:ylabel='sex'>
```



```
In [133... titanic_df.head(16)
```

Out[133...]

	survived	pclass	age	sibsp	parch	fare
sex						
male	0	3	22.0	1	0	7.2500
female	1	1	38.0	1	0	71.2833
female	1	3	26.0	0	0	7.9250
female	1	1	35.0	1	0	53.1000
male	0	3	35.0	0	0	8.0500
male	0	3	NaN	0	0	8.4583
male	0	1	54.0	0	0	51.8625
male	0	3	2.0	3	1	21.0750
female	1	3	27.0	0	2	11.1333
female	1	2	14.0	1	0	30.0708
female	1	3	4.0	1	1	16.7000
female	1	1	58.0	0	0	26.5500
male	0	3	20.0	0	0	8.0500
male	0	3	39.0	1	5	31.2750
female	0	3	14.0	0	0	7.8542
female	1	2	55.0	0	0	16.0000

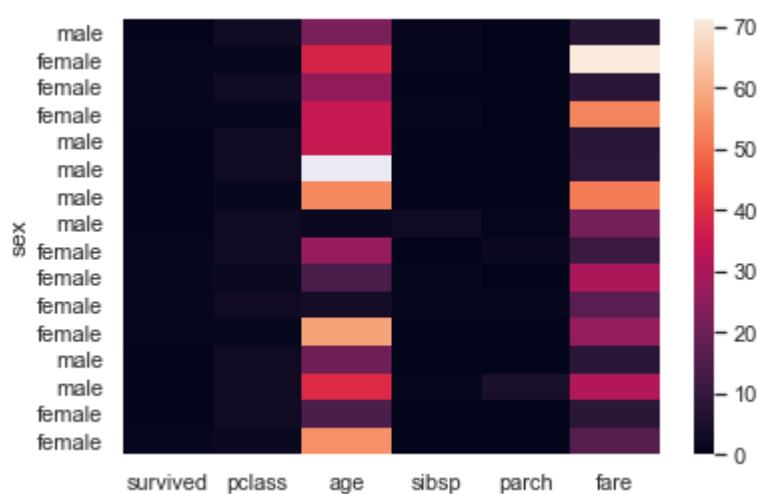
In [134...]

```
titanic2_df = titanic_df.head(16)
```

In [135...]

```
titanic2_df
sns.heatmap(titanic2_df)
```

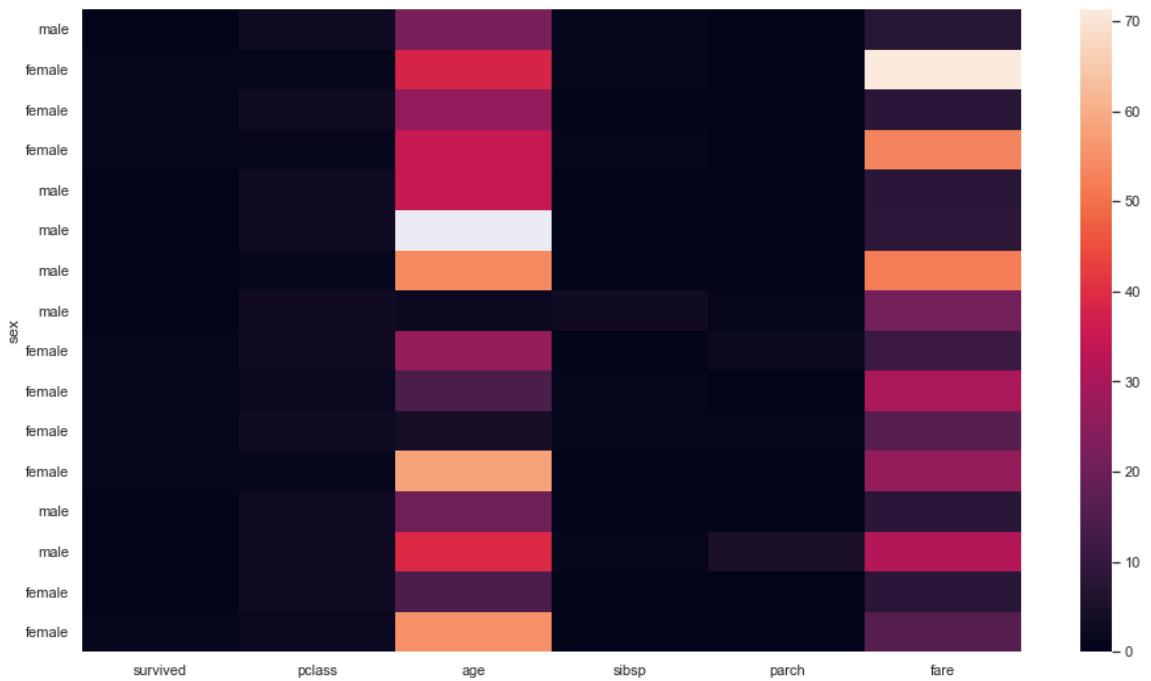
Out[135...]



In [136...]

```
plt.figure(figsize=(16,9))
titanic2_df
sns.heatmap(titanic2_df) # Differences occur due to number of columns,
```

Out[136...]



```

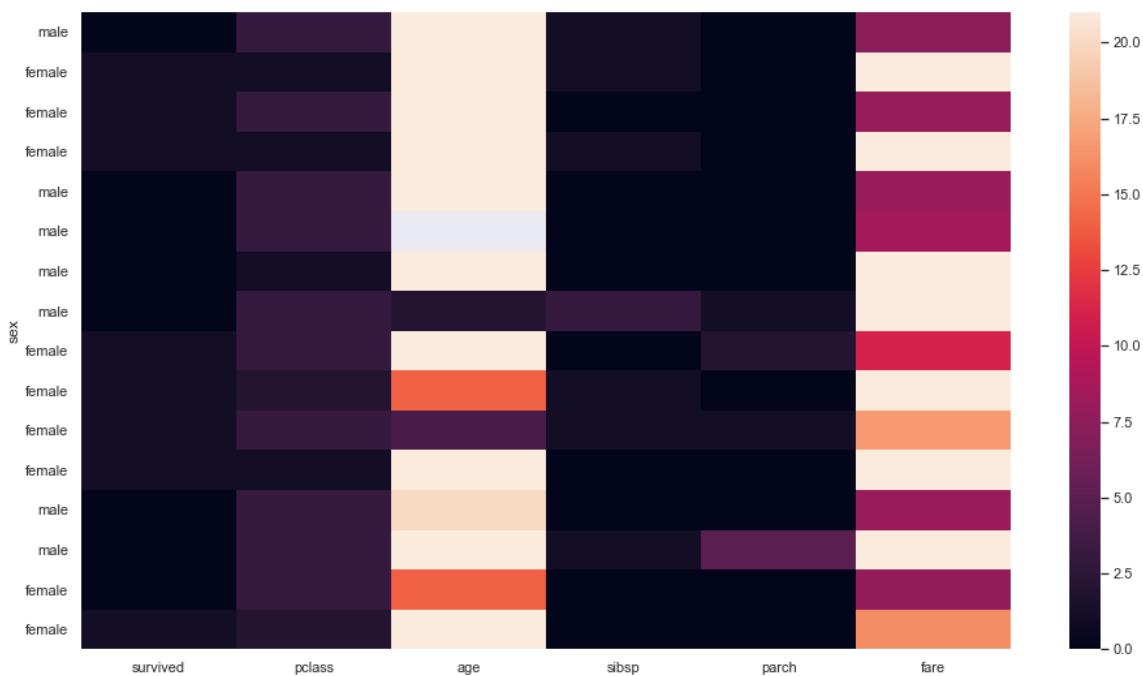
sns.heatmap( data, *, vmin=None, vmax=None, cmap=None, center=None, robust=False, annot=None,
fmt='.2g', annot_kws=None, linewidths=0, linecolor='white', cbar=True, cbar_kws=None, cbar_ax=None,
square=False, xticklabels='auto', yticklabels='auto', mask=None, ax=None, **kwargs, )Parameters -----
data : rectangular dataset 2D dataset that can be coerced into an ndarray. If a Pandas DataFrame is
provided, the index/column information will be used to label the columns and rows. vmin, vmax : floats,
optional Values to anchor the colormap, otherwise they are inferred from the data and other keyword
arguments. cmap : matplotlib colormap name or object, or list of colors, optional The mapping from data
values to color space. If not provided, the default will depend on whether ``center`` is set. center : float,
optional The value at which to center the colormap when plotting divergent data. Using this parameter will
change the default ``cmap`` if none is specified. robust : bool, optional If True and ``vmin`` or ``vmax`` are
absent, the colormap range is computed with robust quantiles instead of the extreme values. annot : bool
or rectangular dataset, optional If True, write the data value in each cell. If an array-like with the same
shape as ``data``, then use this to annotate the heatmap instead of the data. Note that DataFrames will
match on position, not index. fmt : str, optional String formatting code to use when adding annotations.
annot_kws : dict of key, value mappings, optional Keyword arguments for :meth:`matplotlib.axes.Axes.text` when
``annot`` is True. linewidths : float, optional Width of the lines that will divide each cell. linecolor :
color, optional Color of the lines that will divide each cell. cbar : bool, optional Whether to draw a colorbar.
cbar_kws : dict of key, value mappings, optional Keyword arguments for
:meth:`matplotlib.figure.Figure.colorbar`. cbar_ax : matplotlib Axes, optional Axes in which to draw the
colorbar, otherwise take space from the main Axes. square : bool, optional If True, set the Axes aspect to
"equal" so each cell will be square-shaped. xticklabels, yticklabels : "auto", bool, list-like, or int, optional If
True, plot the column names of the dataframe. If False, don't plot the column names. If list-like, plot these
alternate labels as the xticklabels. If an integer, use the column names but plot only every n label. If "auto",
try to densely plot non-overlapping labels. mask : bool array or DataFrame, optional If passed, data will not
be shown in cells where ``mask`` is True. Cells with missing values are automatically masked. ax :
matplotlib Axes, optional Axes in which to draw the plot, otherwise use the currently-active Axes. kwargs :
other keyword arguments All other keyword arguments are passed to
:meth:`matplotlib.axes.Axes.pcolormesh`.

```

**vmin, vmax : floats, optional.** Values to anchor the colormap, otherwise they are inferred from the data and other keyword arguments.

```
In [137... plt.figure(figsize=(16, 9))  
sns.heatmap(titanic2_df, vmin=0 , vmax=21)
```

```
Out[137... <AxesSubplot:ylabel='sex'>
```



`cmap` : matplotlib colormap name or object, or list of colors, optional. The mapping from data values to color space. If not provided, the default will depend on whether `center` is set.

"Possible values are:

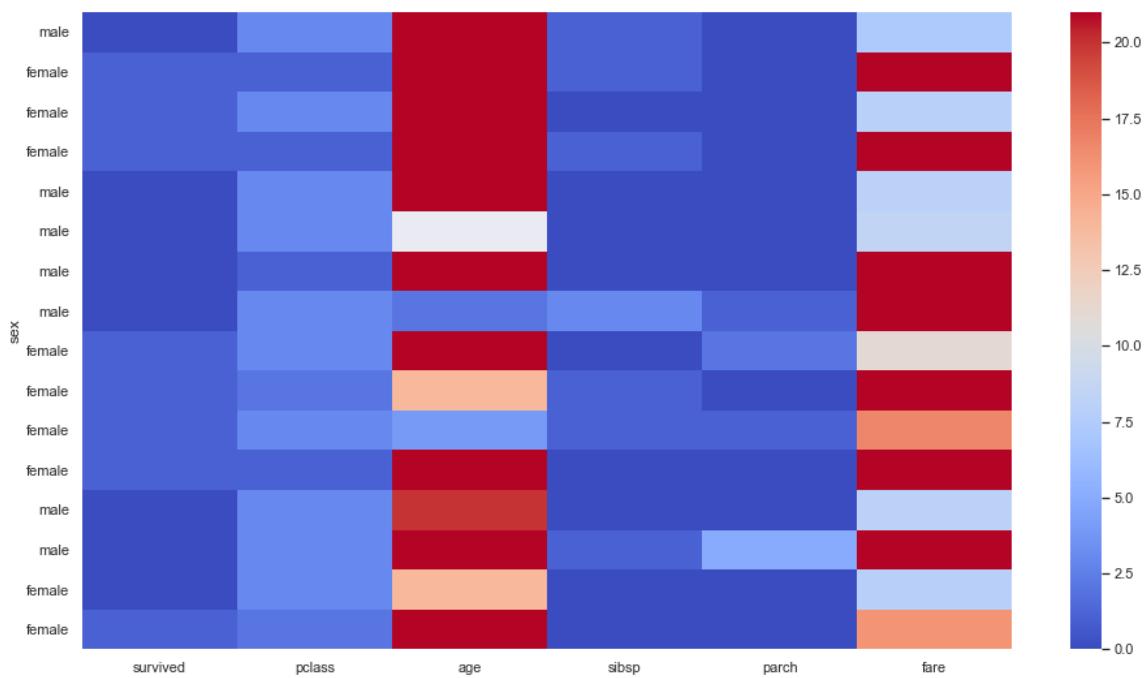
Accent, Accent\_r, Blues, Blues\_r, BrBG, BrBG\_r, BuGn, BuGn\_r, BuPu, BuPu\_r, CMRmap, CMRmap\_r, Dark2, Dark2\_r, GnBu, GnBu\_r, Greens, Greens\_r, Greys, Greys\_r, OrRd, OrRd\_r, Oranges, Oranges\_r, PRGn, PRGn\_r, Paired, Paired\_r, Pastel1, Pastel1\_r, Pastel2, Pastel2\_r, PiYG, PiYG\_r, PuBu, PuBuGn, PuBuGn\_r, PuBu\_r, PuOr, PuOr\_r, PuRd, PuRd\_r, Purples, Purples\_r, RdBu, RdBu\_r, RdGy, RdGy\_r, RdPu, RdPu\_r, RdYlBu, RdYlBu\_r, RdYlGn, RdYlGn\_r, Reds, Reds\_r, Set1, Set1\_r, Set2, Set2\_r, Set3, Set3\_r, Spectral, Spectral\_r, Wistia, Wistia\_r, YIGn, YIGnBu, YIGnBu\_r, YIGn\_r, YlOrBr, YlOrBr\_r, YlOrRd, YlOrRd\_r, afmhot, afmhot\_r, autumn, autumn\_r, binary, binary\_r, bone, bone\_r, brg, brg\_r, bwr, bwr\_r, cividis, cividis\_r, cool, cool\_r, coolwarm, coolwarm\_r, copper, copper\_r, cubehelix, cubehelix\_r, flag, flag\_r, gist\_earth, gist\_earth\_r, gist\_gray, gist\_gray\_r, gist\_heat, gist\_heat\_r, gist\_ncar, gist\_ncar\_r, gist\_rainbow, gist\_rainbow\_r, gist\_stern, gist\_stern\_r, gist\_yarg, gist\_yarg\_r, gnuplot, gnuplot2, gnuplot2\_r, gnuplot\_r, gray, gray\_r, hot, hot\_r, hsv, hsv\_r, icefire, icefire\_r, inferno, inferno\_r, jet, jet\_r, magma, magma\_r, mako, mako\_r, nipy\_spectral, nipy\_spectral\_r, ocean, ocean\_r, pink, pink\_r, plasma, plasma\_r, prism, prism\_r, rainbow, rainbow\_r, rocket, rocket\_r, seismic, seismic\_r, spring, spring\_r, summer, summer\_r, tab10, tab10\_r, tab20, tab20\_r, tab20b, tab20b\_r,

```
tab20c, tab20c_r, terrain, terrain_r, twilight, twilight_r, twilight_shifted, twilight_shifted_r,  
viridis, viridis_r, vlag, vlag_r, winter, winter_r ''
```

In [138...]

```
plt.figure(figsize=(16, 9))  
sns.heatmap(titanic2_df, vmin=0 , vmax=21, cmap="coolwarm")
```

Out[138...]



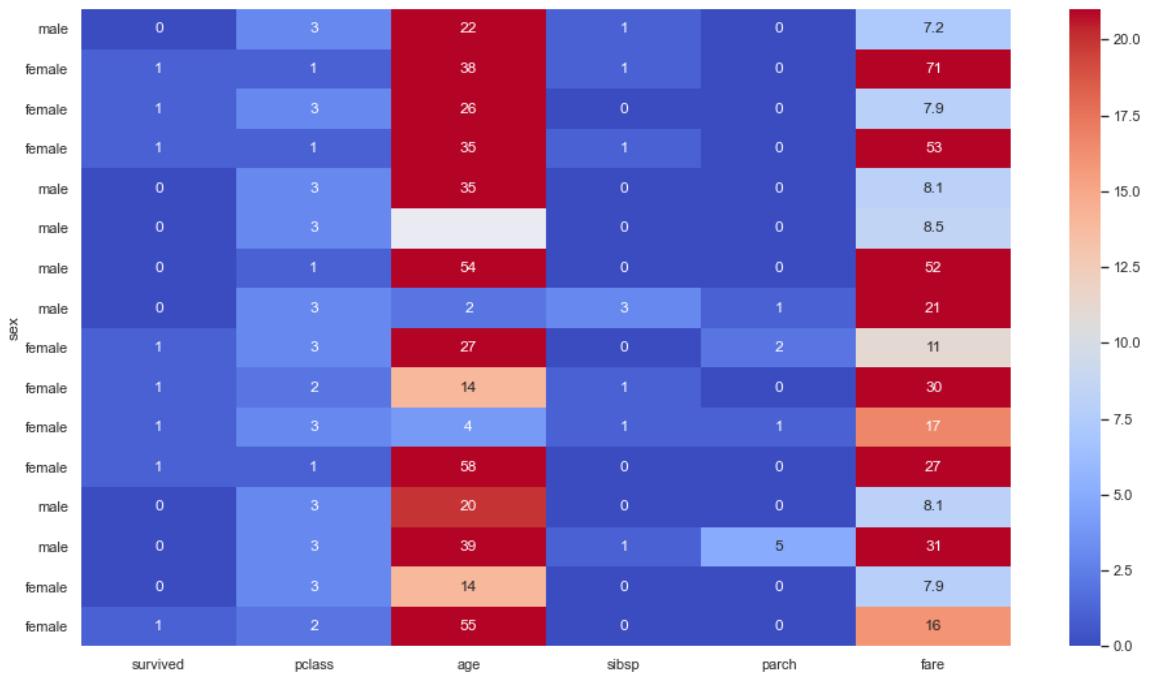
annot : bool or rectangular dataset, optional. If True, write the data value in each cell. If an array-like with the same shape as `data`, then use this to annotate the heatmap instead of the data. Note that DataFrames will match on position, not index.

In [139...]

```
plt.figure(figsize=(16, 9))  
sns.heatmap(titanic2_df, vmin=0 , vmax=21, cmap="coolwarm", annot=True)
```

Out[139...]

```
<AxesSubplot:ylabel='sex'>
```



```
In [140]: arr_2d
```

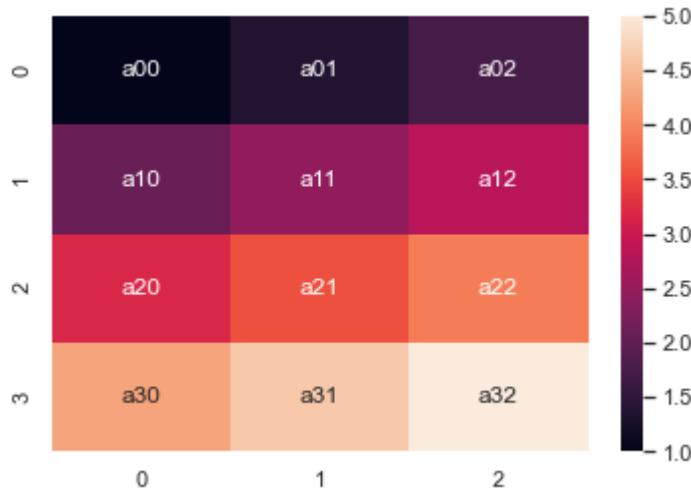
```
Out[140]: array([[1.          , 1.36363636, 1.72727273],
 [2.09090909, 2.45454545, 2.81818182],
 [3.18181818, 3.54545455, 3.90909091],
 [4.27272727, 4.63636364, 5.          ]])
```

```
In [141]: annot_arr = np.array([['a00','a01','a02'],
 ['a10','a11','a12'],
 ['a20','a21','a22'],
 ['a30','a31','a32']])
 annot_arr
```

```
Out[141]: array([['a00', 'a01', 'a02'],
 ['a10', 'a11', 'a12'],
 ['a20', 'a21', 'a22'],
 ['a30', 'a31', 'a32']], dtype='<U3')
```

```
In [142]: sns.heatmap(arr_2d, annot = annot_arr, fmt = "s")
```

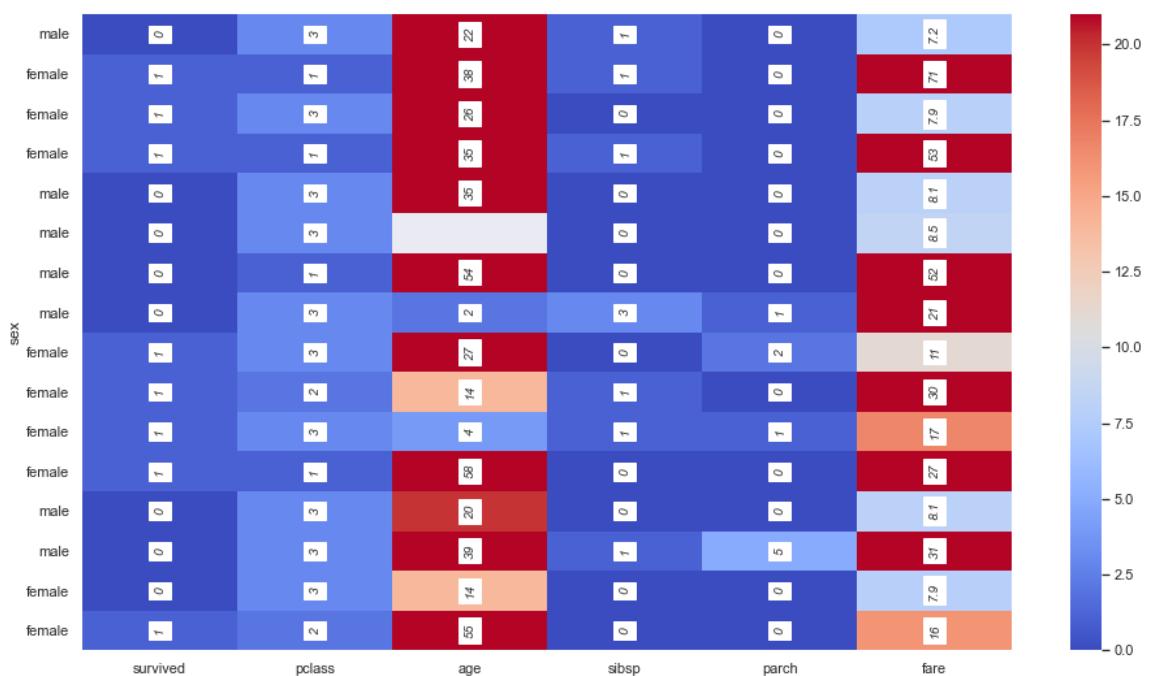
```
Out[142]: <AxesSubplot:>
```



`annot_kws` : dict of key, value mappings, optional Keyword arguments for `:meth:matplotlib.axes.Axes.text` when `annot` is True.

```
In [143...]  
plt.figure(figsize=(16,9))  
annot_kws={"fontsize":10,  
           "fontstyle":"italic",  
           'color':'k',  
           'alpha':0.9,  
           'rotation':"vertical",  
           'verticalalignment':'center',  
           'backgroundcolor':'w'}  
sns.heatmap(titanic2_df, vmin=0 , vmax=21, cmap="coolwarm", annot=True, an
```

Out[143...]



`linewidths` :-Width of the lines that will divide each cell.

```
In [144...]  
plt.figure(figsize=(16,9))  
sns.heatmap(titanic2_df, cmap="coolwarm", annot=True, linewidth = 4)  
Out[144...]
```

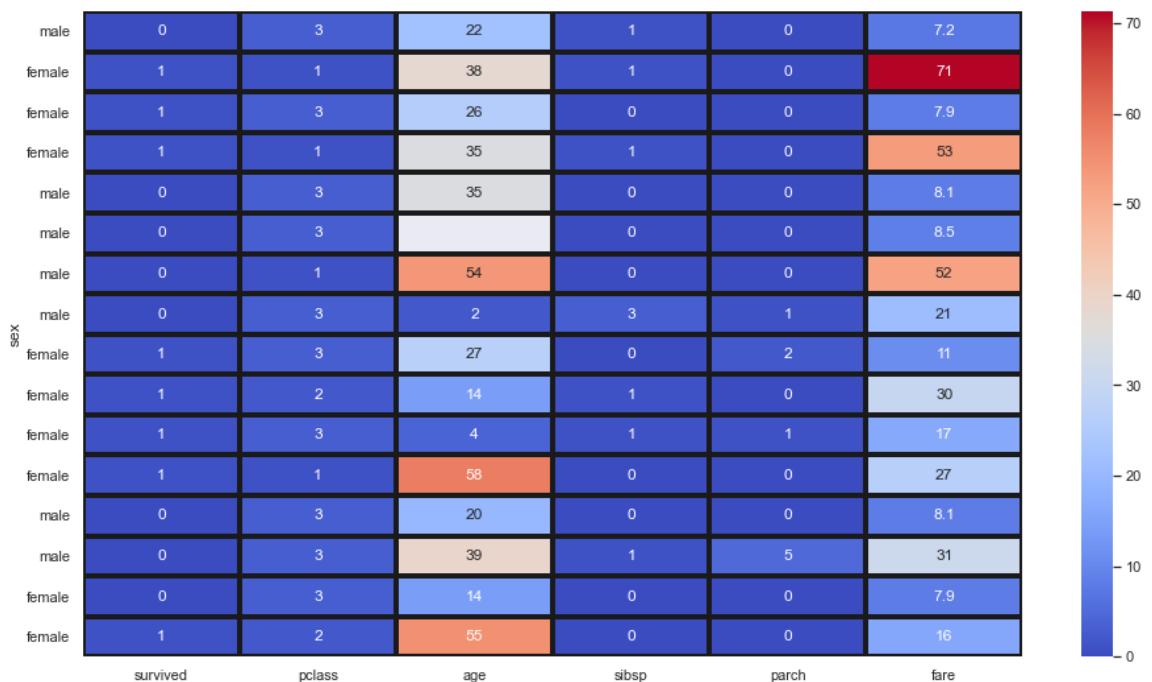


## linecolor :-Color of the lines that will divide each cell

In [145...]

```
plt.figure(figsize=(16, 9))
sns.heatmap(titanic2_df, cmap="coolwarm", annot=True, linewidth = 4, linec
```

Out[145...]

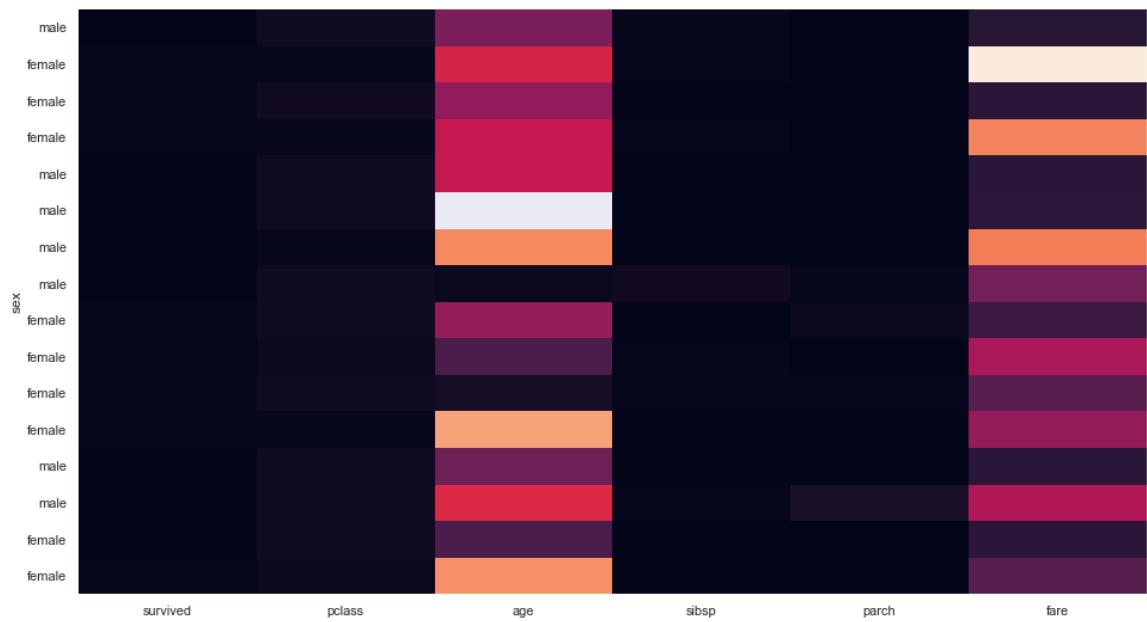


## cbar :- Whether to draw a colorbar.

In [146...]

```
plt.figure(figsize=(16, 9))
sns.heatmap(titanic2_df, cbar =False)
```

```
Out[146... <AxesSubplot:ylabel='sex'>
```

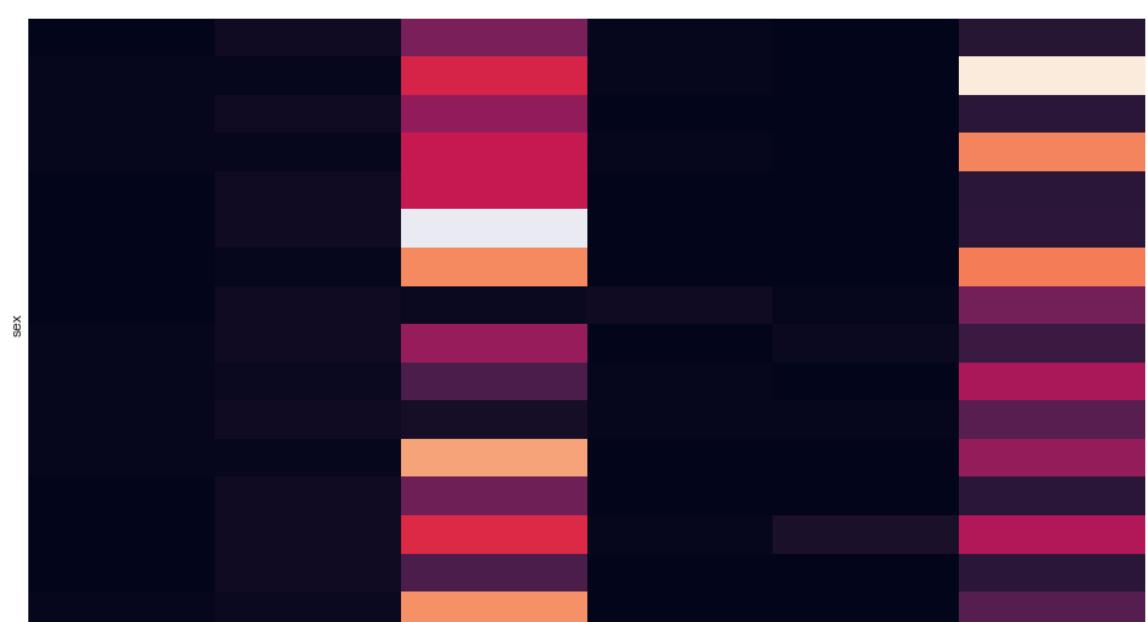


`xticklabels`, `yticklabels` : "auto", bool, list-like, or int, optional. If True, plot the column names of the dataframe. If False, don't plot the column names. If list-like, plot these alternate labels as the `xticklabels`. If an integer, use the column names but plot only every n label. If "auto", try to densely plot non-overlapping labels.

```
In [147...:
```

```
plt.figure(figsize=(16,9))
sns.heatmap(titanic2_df, cbar =False, xticklabels=False, yticklabels=False)
```

```
Out[147...:
```

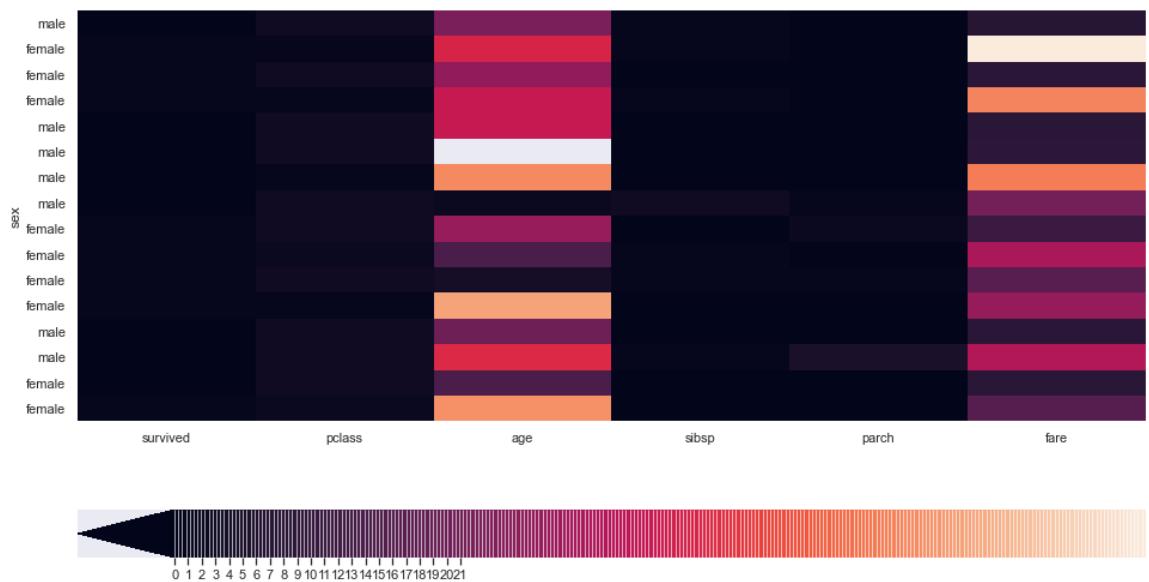


cbar\_kws : dict of key, value mappings, optional Keyword arguments for :meth:matplotlib.figure.Figure.colorbar

In [148...]

```
plt.figure(figsize=(16, 9))
cbar_kws = {"orientation": "horizontal",
            "shrink": 1,
            "extend": 'min',
            "extendfrac": 0.1,
            "ticks": np.arange(0, 22),
            "drawedges": True}
sns.heatmap(titanic2_df, cbar_kws = cbar_kws)
```

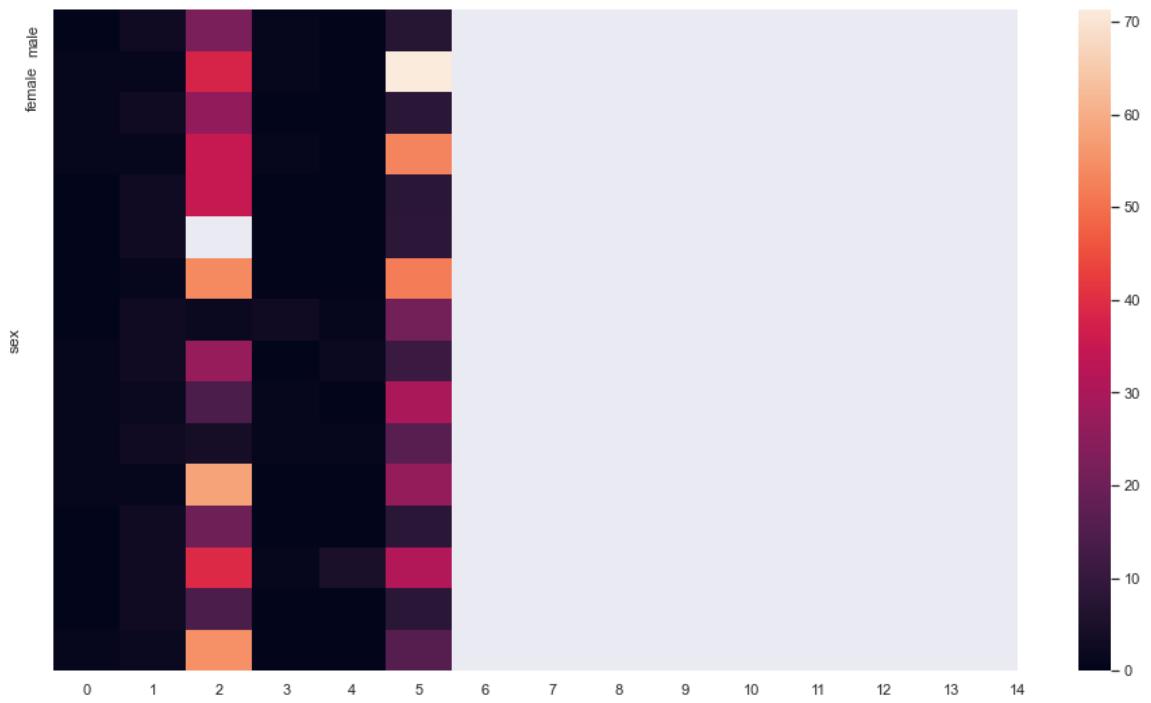
Out[148...]



In [149...]

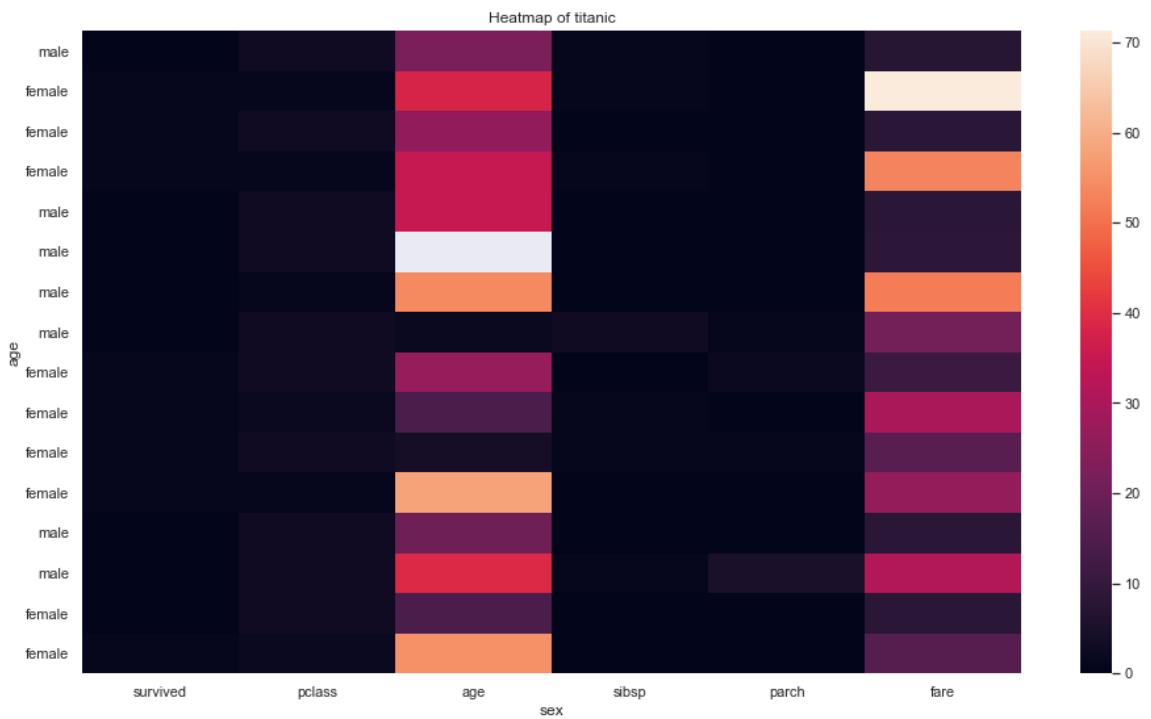
```
plt.figure(figsize=(16, 9))
sex = ['male', 'female']
sns.heatmap(titanic2_df, xticklabels=np.arange(0, 15), yticklabels=sex)
```

Out[149...]

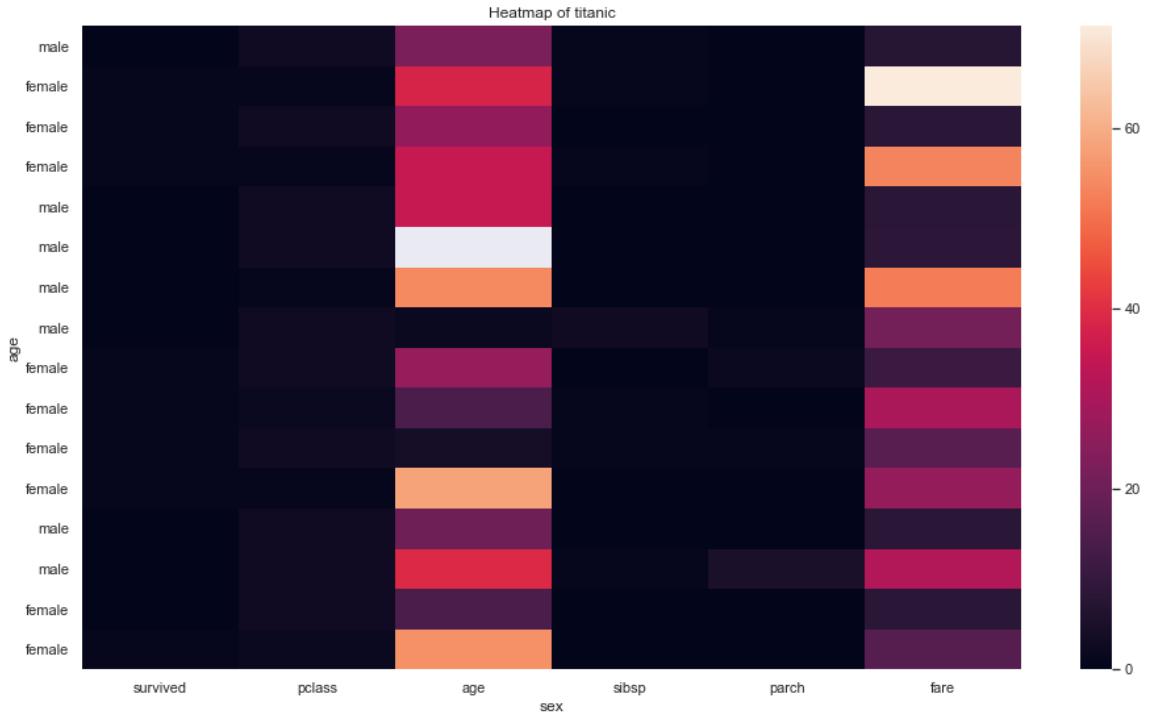


```
In [150...]: plt.figure(figsize=(16, 9))
ax = sns.heatmap(titanic2_df)
ax.set(title="Heatmap of titanic",
      xlabel ="sex",
      ylabel ="age")
```

```
Out[150...]: [Text(0.5, 1.0, 'Heatmap of titanic'),
Text(0.5, 57.5, 'sex'),
Text(120.5, 0.5, 'age')]
```



```
In [151...]: plt.figure(figsize=(16, 9))
ax = sns.heatmap(titanic2_df)
ax.set(title="Heatmap of titanic",
      xlabel ="sex",
      ylabel ="age")
sns.set(font_scale=5)
```



## Correlation Heatmap

Parameters -----  
method : {'pearson', 'kendall', 'spearman'} or callable  
Method of correlation:  
\* pearson : standard correlation coefficient  
\* kendall : Kendall Tau correlation coefficient  
\* spearman : Spearman rank correlation  
\* callable: callable with input two 1d ndarrays and returning a float. Note that the returned matrix from corr will have 1 along the diagonals and will be symmetric regardless of the callable's behavior.

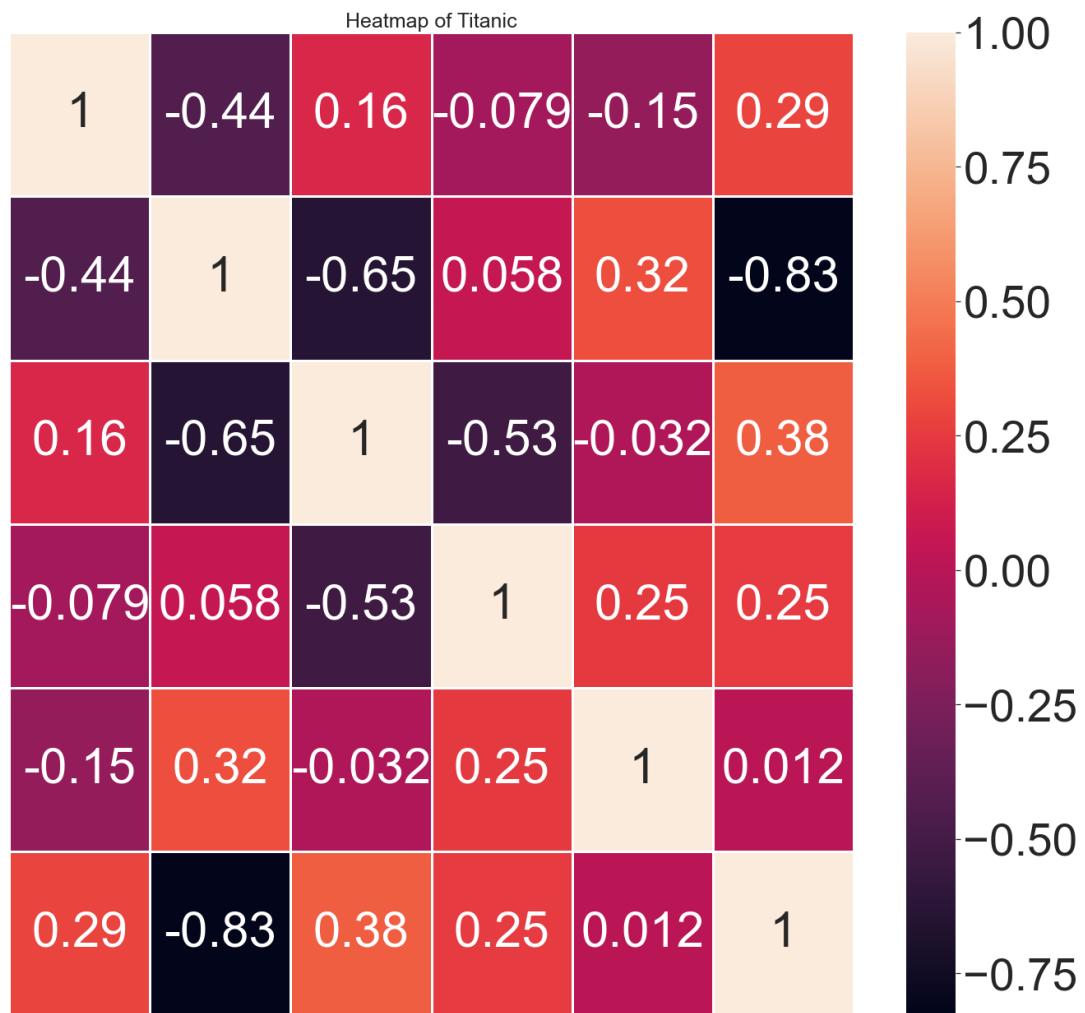
In [152...]: `titanic2_df.corr()`

Out[152...]:

	survived	pclass	age	sibsp	parch	fare
<b>survived</b>	1.000000	-0.437595	0.162926	-0.079305	-0.147264	0.291960
<b>pclass</b>	-0.437595	1.000000	-0.647956	0.057839	0.322210	-0.828912
<b>age</b>	0.162926	-0.647956	1.000000	-0.528265	-0.032410	0.383694
<b>sibsp</b>	-0.079305	0.057839	-0.528265	1.000000	0.245255	0.254424
<b>parch</b>	-0.147264	0.322210	-0.032410	0.245255	1.000000	0.011759
<b>fare</b>	0.291960	-0.828912	0.383694	0.254424	0.011759	1.000000

In [153...]:

```
plt.figure(figsize=(23,22))
ax = sns.heatmap(titanic2_df.corr(), annot = True, linewidth = 3)
ax.tick_params(size=10, color='w', labelsize=20, labelcolor='w')
plt.title("Heatmap of Titanic", fontsize=25)
plt.show()
```



In [154...]

```
from sklearn.datasets import load_breast_cancer
cancer_dataset = load_breast_cancer()
cancer_dataset
```

Out[154]



\nFeatures are computed from a digitized image of a fine needle\naspirate (FNA) of a breast mass. They describe\ncharacteristics of the cell nuclei present in the image.\n\nSeparating plane described above was obtained using\nMultisurface Method-Tree (MSM-T) [K. P. Bennett, "Decision Tree\nconstruction Via Linear Programming." Proceedings of the 4th\nMidwest Artificial Intelligence and Cognitive Science Society,\npp. 97-101, 1992], a classification method which uses linear\nprogramming to construct a decision tree. Relevant features\nwere selected using an exhaustive search in the space of 1-4\nfeatures and 1-3 separating planes.\n\nThe actual linear program used to obtain the separating plane\nin the 3-dimensional space is that described in:\n[K. P. Bennett and O. L. Mangasarian: "Robust Linear\nProgramming Discrimination of Two Linearly Inseparable Sets",\nOptimization Methods and Software 1, 1992, 23-34].\n\nThis database is also available through the UW CS ftp server:\n\nftp://ftp.cs.wisc.edu/ncd/math-prog/cpo-dataset/machine-learn/WDBC/\n.. topic:: References\n\n - W.N. Street, W.H. Wolberg and O.L. Mangasarian. Nuclear feature extraction\nfor breast tumor diagnosis. IS&T/SPIE 1993 International Symposium on\nElectronic Imaging: Science and Technology, volume 1905, pages 861-870,\nSan Jose, CA, 1993.\n - O.L. Mangasarian, W.N. Street and W.H. Wolberg.\nBreast cancer diagnosis and prognosis via linear programming. Operations Research, 43(4), pages 570-577, July-August 1995.\n - W.H. Wolberg, W.N. Street, and O.L. Mangasarian. Machine learning techniques\n to diagnose breast cancer from fine-needle aspirates. Cancer Letters 77 (1994) 163-171.',

```
'feature_names': array(['mean radius', 'mean texture', 'mean perimeter',
'mean area',
'mean smoothness', 'mean compactness', 'mean concavity',
'mean concave points', 'mean symmetry', 'mean fractal dimension',
'radius error', 'texture error', 'perimeter error', 'area error',
'smoothness error', 'compactness error', 'concavity error',
'concave points error', 'symmetry error',
'fractal dimension error', 'worst radius', 'worst texture',
'worst perimeter', 'worst area', 'worst smoothness',
>worst compactness', 'worst concavity', 'worst concave points',
>worst symmetry', 'worst fractal dimension'], dtype='|<U23'),
'filename': 'c:\\\\users\\\\nemade\\\\python 37\\\\lib\\\\site-packages\\\\sklearn\\\\datasets\\\\data\\\\breast_cancer.csv'}
```

In [155...]

```
# create dataframe
cancer_df = pd.DataFrame(np.c_[cancer_dataset['data'], cancer_dataset['target']],
columns = np.append(cancer_dataset['feature_name'],
cancer_df
```

Out[155...]

	mean radius	mean texture	mean perimeter	mean area	mean smoothness	mean compactness	mean concavity	mean concave points	sy
0	17.990	10.38	122.80	1001.0	0.11840	0.27760	0.300100	0.147100	
1	20.570	17.77	132.90	1326.0	0.08474	0.07864	0.086900	0.070170	
2	19.690	21.25	130.00	1203.0	0.10960	0.15990	0.197400	0.127900	
3	11.420	20.38	77.58	386.1	0.14250	0.28390	0.241400	0.105200	
4	20.290	14.34	135.10	1297.0	0.10030	0.13280	0.198000	0.104300	
5	12.450	15.70	82.57	477.1	0.12780	0.17000	0.157800	0.080890	
6	18.250	19.98	119.60	1040.0	0.09463	0.10900	0.112700	0.074000	
7	13.710	20.83	90.20	577.9	0.11890	0.16450	0.093660	0.059850	
8	13.000	21.82	87.50	519.8	0.12730	0.19320	0.185900	0.093530	
9	12.460	24.04	83.97	475.9	0.11860	0.23960	0.227300	0.085430	

10	16.020	23.24	102.70	797.8	0.08206	0.06669	0.032990	0.033230
11	15.780	17.89	103.60	781.0	0.09710	0.12920	0.099540	0.066060
12	19.170	24.80	132.40	1123.0	0.09740	0.24580	0.206500	0.111800
13	15.850	23.95	103.70	782.7	0.08401	0.10020	0.099380	0.053640
14	13.730	22.61	93.60	578.3	0.11310	0.22930	0.212800	0.080250
15	14.540	27.54	96.73	658.8	0.11390	0.15950	0.163900	0.073640
16	14.680	20.13	94.74	684.5	0.09867	0.07200	0.073950	0.052590
17	16.130	20.68	108.10	798.8	0.11700	0.20220	0.172200	0.102800
18	19.810	22.15	130.00	1260.0	0.09831	0.10270	0.147900	0.094980
19	13.540	14.36	87.46	566.3	0.09779	0.08129	0.066640	0.047810
20	13.080	15.71	85.63	520.0	0.10750	0.12700	0.045680	0.031100
21	9.504	12.44	60.34	273.9	0.10240	0.06492	0.029560	0.020760
22	15.340	14.26	102.50	704.4	0.10730	0.21350	0.207700	0.097560
23	21.160	23.04	137.20	1404.0	0.09428	0.10220	0.109700	0.086320
24	16.650	21.38	110.00	904.6	0.11210	0.14570	0.152500	0.091700
25	17.140	16.40	116.00	912.7	0.11860	0.22760	0.222900	0.140100
26	14.580	21.53	97.41	644.8	0.10540	0.18680	0.142500	0.087830
27	18.610	20.25	122.10	1094.0	0.09440	0.10660	0.149000	0.077310
28	15.300	25.27	102.40	732.4	0.10820	0.16970	0.168300	0.087510
29	17.570	15.05	115.00	955.1	0.09847	0.11570	0.098750	0.079530
30	18.630	25.11	124.80	1088.0	0.10640	0.18870	0.231900	0.124400
31	11.840	18.70	77.93	440.6	0.11090	0.15160	0.121800	0.051820
32	17.020	23.98	112.80	899.3	0.11970	0.14960	0.241700	0.120300
33	19.270	26.47	127.90	1162.0	0.09401	0.17190	0.165700	0.075930
34	16.130	17.88	107.00	807.2	0.10400	0.15590	0.135400	0.077520
35	16.740	21.59	110.10	869.5	0.09610	0.13360	0.134800	0.060180
36	14.250	21.72	93.63	633.0	0.09823	0.10980	0.131900	0.055980
37	13.030	18.42	82.61	523.8	0.08983	0.03766	0.025620	0.029230
38	14.990	25.20	95.54	698.8	0.09387	0.05131	0.023980	0.028990
39	13.480	20.82	88.40	559.2	0.10160	0.12550	0.106300	0.054390
40	13.440	21.58	86.18	563.0	0.08162	0.06031	0.031100	0.020310
41	10.950	21.35	71.90	371.1	0.12270	0.12180	0.104400	0.056690
42	19.070	24.81	128.30	1104.0	0.09081	0.21900	0.210700	0.099610
43	13.280	20.28	87.32	545.2	0.10410	0.14360	0.098470	0.061580
44	13.170	21.81	85.42	531.5	0.09714	0.10470	0.082590	0.052520
45	18.650	17.60	123.70	1076.0	0.10990	0.16860	0.197400	0.100900
46	8.196	16.84	51.71	201.9	0.08600	0.05943	0.015880	0.005917
47	13.170	18.66	85.98	534.6	0.11580	0.12310	0.122600	0.073400
48	12.050	14.63	78.04	449.3	0.10310	0.09092	0.065920	0.027490

<b>49</b>	13.490	22.30	86.91	561.0	0.08752	0.07698	0.047510	0.033840
<b>50</b>	11.760	21.60	74.72	427.9	0.08637	0.04966	0.016570	0.011150
<b>51</b>	13.640	16.34	87.21	571.8	0.07685	0.06059	0.018570	0.017230
<b>52</b>	11.940	18.24	75.71	437.6	0.08261	0.04751	0.019720	0.013490
<b>53</b>	18.220	18.70	120.30	1033.0	0.11480	0.14850	0.177200	0.106000
<b>54</b>	15.100	22.02	97.26	712.8	0.09056	0.07081	0.052530	0.033340
<b>55</b>	11.520	18.75	73.34	409.0	0.09524	0.05473	0.030360	0.022780
<b>56</b>	19.210	18.57	125.50	1152.0	0.10530	0.12670	0.132300	0.089940
<b>57</b>	14.710	21.59	95.55	656.9	0.11370	0.13650	0.129300	0.081230
<b>58</b>	13.050	19.31	82.61	527.2	0.08060	0.03789	0.000692	0.004167
<b>59</b>	8.618	11.79	54.34	224.5	0.09752	0.05272	0.020610	0.007799
<b>60</b>	10.170	14.88	64.55	311.9	0.11340	0.08061	0.010840	0.012900
<b>61</b>	8.598	20.98	54.66	221.8	0.12430	0.08963	0.030000	0.009259
<b>62</b>	14.250	22.15	96.42	645.7	0.10490	0.20080	0.213500	0.086530
<b>63</b>	9.173	13.86	59.20	260.9	0.07721	0.08751	0.059880	0.021800
<b>64</b>	12.680	23.84	82.69	499.0	0.11220	0.12620	0.112800	0.068730
<b>65</b>	14.780	23.94	97.40	668.3	0.11720	0.14790	0.126700	0.090290
<b>66</b>	9.465	21.01	60.11	269.4	0.10440	0.07773	0.021720	0.015040
<b>67</b>	11.310	19.04	71.80	394.1	0.08139	0.04701	0.037090	0.022300
<b>68</b>	9.029	17.33	58.79	250.5	0.10660	0.14130	0.313000	0.043750
<b>69</b>	12.780	16.49	81.37	502.5	0.09831	0.05234	0.036530	0.028640
<b>70</b>	18.940	21.31	123.60	1130.0	0.09009	0.10290	0.108000	0.079510
<b>71</b>	8.888	14.64	58.79	244.0	0.09783	0.15310	0.086060	0.028720
<b>72</b>	17.200	24.52	114.20	929.4	0.10710	0.18300	0.169200	0.079440
<b>73</b>	13.800	15.79	90.43	584.1	0.10070	0.12800	0.077890	0.050690
<b>74</b>	12.310	16.52	79.19	470.9	0.09172	0.06829	0.033720	0.022720
<b>75</b>	16.070	19.65	104.10	817.7	0.09168	0.08424	0.097690	0.066380
<b>76</b>	13.530	10.94	87.91	559.2	0.12910	0.10470	0.068770	0.065560
<b>77</b>	18.050	16.15	120.20	1006.0	0.10650	0.21460	0.168400	0.108000
<b>78</b>	20.180	23.97	143.70	1245.0	0.12860	0.34540	0.375400	0.160400
<b>79</b>	12.860	18.00	83.19	506.3	0.09934	0.09546	0.038890	0.023150
<b>80</b>	11.450	20.97	73.81	401.5	0.11020	0.09362	0.045910	0.022330
<b>81</b>	13.340	15.86	86.49	520.0	0.10780	0.15350	0.116900	0.069870
<b>82</b>	25.220	24.91	171.50	1878.0	0.10630	0.26650	0.333900	0.184500
<b>83</b>	19.100	26.29	129.10	1132.0	0.12150	0.17910	0.193700	0.146900
<b>84</b>	12.000	15.65	76.95	443.3	0.09723	0.07165	0.041510	0.018630
<b>85</b>	18.460	18.52	121.10	1075.0	0.09874	0.10530	0.133500	0.087950
<b>86</b>	14.480	21.46	94.25	648.2	0.09444	0.09947	0.120400	0.049380
<b>87</b>	19.020	24.59	122.00	1076.0	0.09029	0.12060	0.146800	0.082710

88	12.360	21.80	79.78	466.1	0.08772	0.09445	0.060150	0.037450
89	14.640	15.24	95.77	651.9	0.11320	0.13390	0.099660	0.070640
90	14.620	24.02	94.57	662.7	0.08974	0.08606	0.031020	0.029570
91	15.370	22.76	100.20	728.2	0.09200	0.10360	0.112200	0.074830
92	13.270	14.76	84.74	551.7	0.07355	0.05055	0.032610	0.026480
93	13.450	18.30	86.60	555.1	0.10220	0.08165	0.039740	0.027800
94	15.060	19.83	100.30	705.6	0.10390	0.15530	0.170000	0.088150
95	20.260	23.03	132.40	1264.0	0.09078	0.13130	0.146500	0.086830
96	12.180	17.84	77.79	451.1	0.10450	0.07057	0.024900	0.029410
97	9.787	19.94	62.11	294.5	0.10240	0.05301	0.006829	0.007937
98	11.600	12.84	74.34	412.6	0.08983	0.07525	0.041960	0.033500
99	14.420	19.77	94.48	642.5	0.09752	0.11410	0.093880	0.058390
100	13.610	24.98	88.05	582.7	0.09488	0.08511	0.086250	0.044890
101	6.981	13.43	43.79	143.5	0.11700	0.07568	0.000000	0.000000
102	12.180	20.52	77.22	458.7	0.08013	0.04038	0.023830	0.017700
103	9.876	19.40	63.95	298.3	0.10050	0.09697	0.061540	0.030290
104	10.490	19.29	67.41	336.1	0.09989	0.08578	0.029950	0.012010
105	13.110	15.56	87.21	530.2	0.13980	0.17650	0.207100	0.096010
106	11.640	18.33	75.17	412.5	0.11420	0.10170	0.070700	0.034850
107	12.360	18.54	79.01	466.7	0.08477	0.06815	0.026430	0.019210
108	22.270	19.67	152.80	1509.0	0.13260	0.27680	0.426400	0.182300
109	11.340	21.26	72.48	396.5	0.08759	0.06575	0.051330	0.018990
110	9.777	16.99	62.50	290.2	0.10370	0.08404	0.043340	0.017780
111	12.630	20.76	82.15	480.4	0.09933	0.12090	0.106500	0.060210
112	14.260	19.65	97.83	629.9	0.07837	0.22330	0.300300	0.077980
113	10.510	20.19	68.64	334.2	0.11220	0.13030	0.064760	0.030680
114	8.726	15.83	55.84	230.9	0.11500	0.08201	0.041320	0.019240
115	11.930	21.53	76.53	438.6	0.09768	0.07849	0.033280	0.020080
116	8.950	15.76	58.74	245.2	0.09462	0.12430	0.092630	0.023080
117	14.870	16.67	98.64	682.5	0.11620	0.16490	0.169000	0.089230
118	15.780	22.91	105.70	782.6	0.11550	0.17520	0.213300	0.094790
119	17.950	20.01	114.20	982.0	0.08402	0.06722	0.072930	0.055960
120	11.410	10.82	73.34	403.3	0.09373	0.06685	0.035120	0.026230
121	18.660	17.12	121.40	1077.0	0.10540	0.11000	0.145700	0.086650
122	24.250	20.20	166.20	1761.0	0.14470	0.28670	0.426800	0.201200
123	14.500	10.89	94.28	640.7	0.11010	0.10990	0.088420	0.057780
124	13.370	16.39	86.10	553.5	0.07115	0.07325	0.080920	0.028000
125	13.850	17.21	88.44	588.7	0.08785	0.06136	0.014200	0.011410
126	13.610	24.69	87.76	572.6	0.09258	0.07862	0.052850	0.030850

127	19.000	18.91	123.40	1138.0	0.08217	0.08028	0.092710	0.056270
128	15.100	16.39	99.58	674.5	0.11500	0.18070	0.113800	0.085340
129	19.790	25.12	130.40	1192.0	0.10150	0.15890	0.254500	0.114900
130	12.190	13.29	79.08	455.8	0.10660	0.09509	0.028550	0.028820
131	15.460	19.48	101.70	748.9	0.10920	0.12230	0.146600	0.080870
132	16.160	21.54	106.20	809.8	0.10080	0.12840	0.104300	0.056130
133	15.710	13.93	102.00	761.7	0.09462	0.09462	0.071350	0.059330
134	18.450	21.91	120.20	1075.0	0.09430	0.09709	0.115300	0.068470
135	12.770	22.47	81.72	506.3	0.09055	0.05761	0.047110	0.027040
136	11.710	16.67	74.72	423.6	0.10510	0.06095	0.035920	0.026000
137	11.430	15.39	73.06	399.8	0.09639	0.06889	0.035030	0.028750
138	14.950	17.57	96.85	678.1	0.11670	0.13050	0.153900	0.086240
139	11.280	13.39	73.00	384.8	0.11640	0.11360	0.046350	0.047960
140	9.738	11.97	61.24	288.5	0.09250	0.04102	0.000000	0.000000
141	16.110	18.05	105.10	813.0	0.09721	0.11370	0.094470	0.059430
142	11.430	17.31	73.66	398.0	0.10920	0.09486	0.020310	0.018610
143	12.900	15.92	83.74	512.2	0.08677	0.09509	0.048940	0.030880
144	10.750	14.97	68.26	355.3	0.07793	0.05139	0.022510	0.007875
145	11.900	14.65	78.11	432.8	0.11520	0.12960	0.037100	0.030030
146	11.800	16.58	78.99	432.0	0.10910	0.17000	0.165900	0.074150
147	14.950	18.77	97.84	689.5	0.08138	0.11670	0.090500	0.035620
148	14.440	15.18	93.97	640.1	0.09970	0.10210	0.084870	0.055320
149	13.740	17.91	88.12	585.0	0.07944	0.06376	0.028810	0.013290
150	13.000	20.78	83.51	519.4	0.11350	0.07589	0.031360	0.026450
151	8.219	20.70	53.27	203.9	0.09405	0.13050	0.132100	0.021680
152	9.731	15.34	63.78	300.2	0.10720	0.15990	0.410800	0.078570
153	11.150	13.08	70.87	381.9	0.09754	0.05113	0.019820	0.017860
154	13.150	15.34	85.31	538.9	0.09384	0.08498	0.092930	0.034830
155	12.250	17.94	78.27	460.3	0.08654	0.06679	0.038850	0.023310
156	17.680	20.74	117.40	963.7	0.11150	0.16650	0.185500	0.105400
157	16.840	19.46	108.40	880.2	0.07445	0.07223	0.051500	0.027710
158	12.060	12.74	76.84	448.6	0.09311	0.05241	0.019720	0.019630
159	10.900	12.96	68.69	366.8	0.07515	0.03718	0.003090	0.006588
160	11.750	20.18	76.10	419.8	0.10890	0.11410	0.068430	0.037380
161	19.190	15.94	126.30	1157.0	0.08694	0.11850	0.119300	0.096670
162	19.590	18.15	130.70	1214.0	0.11200	0.16660	0.250800	0.128600
163	12.340	22.22	79.85	464.5	0.10120	0.10150	0.053700	0.028220
164	23.270	22.04	152.10	1686.0	0.08439	0.11450	0.132400	0.097020
165	14.970	19.76	95.50	690.2	0.08421	0.05352	0.019470	0.019390

166	10.800	9.71	68.77	357.6	0.09594	0.05736	0.025310	0.016980
167	16.780	18.80	109.30	886.3	0.08865	0.09182	0.084220	0.065760
168	17.470	24.68	116.10	984.6	0.10490	0.16030	0.215900	0.104300
169	14.970	16.95	96.22	685.9	0.09855	0.07885	0.026020	0.037810
170	12.320	12.39	78.85	464.1	0.10280	0.06981	0.039870	0.037000
171	13.430	19.63	85.84	565.4	0.09048	0.06288	0.058580	0.034380
172	15.460	11.89	102.50	736.9	0.12570	0.15550	0.203200	0.109700
173	11.080	14.71	70.21	372.7	0.10060	0.05743	0.023630	0.025830
174	10.660	15.15	67.49	349.6	0.08792	0.04302	0.000000	0.000000
175	8.671	14.45	54.42	227.2	0.09138	0.04276	0.000000	0.000000
176	9.904	18.06	64.60	302.4	0.09699	0.12940	0.130700	0.037160
177	16.460	20.11	109.30	832.9	0.09831	0.15560	0.179300	0.088660
178	13.010	22.22	82.01	526.4	0.06251	0.01938	0.001595	0.001852
179	12.810	13.06	81.29	508.8	0.08739	0.03774	0.009193	0.013300
180	27.220	21.87	182.10	2250.0	0.10940	0.19140	0.287100	0.187800
181	21.090	26.57	142.70	1311.0	0.11410	0.28320	0.248700	0.149600
182	15.700	20.31	101.20	766.6	0.09597	0.08799	0.065930	0.051890
183	11.410	14.92	73.53	402.0	0.09059	0.08155	0.061810	0.023610
184	15.280	22.41	98.92	710.6	0.09057	0.10520	0.053750	0.032630
185	10.080	15.11	63.76	317.5	0.09267	0.04695	0.001597	0.002404
186	18.310	18.58	118.60	1041.0	0.08588	0.08468	0.081690	0.058140
187	11.710	17.19	74.68	420.3	0.09774	0.06141	0.038090	0.032390
188	11.810	17.39	75.27	428.9	0.10070	0.05562	0.023530	0.015530
189	12.300	15.90	78.83	463.7	0.08080	0.07253	0.038440	0.016540
190	14.220	23.12	94.37	609.9	0.10750	0.24130	0.198100	0.066180
191	12.770	21.41	82.02	507.4	0.08749	0.06601	0.031120	0.028640
192	9.720	18.22	60.73	288.1	0.06950	0.02344	0.000000	0.000000
193	12.340	26.86	81.15	477.4	0.10340	0.13530	0.108500	0.045620
194	14.860	23.21	100.40	671.4	0.10440	0.19800	0.169700	0.088780
195	12.910	16.33	82.53	516.4	0.07941	0.05366	0.038730	0.023770
196	13.770	22.29	90.63	588.9	0.12000	0.12670	0.138500	0.065260
197	18.080	21.84	117.40	1024.0	0.07371	0.08642	0.110300	0.057780
198	19.180	22.49	127.50	1148.0	0.08523	0.14280	0.111400	0.067720
199	14.450	20.22	94.49	642.7	0.09872	0.12060	0.118000	0.059800
200	12.230	19.56	78.54	461.0	0.09586	0.08087	0.041870	0.041070
201	17.540	19.32	115.10	951.6	0.08968	0.11980	0.103600	0.074880
202	23.290	26.67	158.90	1685.0	0.11410	0.20840	0.352300	0.162000
203	13.810	23.75	91.56	597.8	0.13230	0.17680	0.155800	0.091760
204	12.470	18.60	81.09	481.9	0.09965	0.10580	0.080050	0.038210

205	15.120	16.68	98.78	716.6	0.08876	0.09588	0.075500	0.040790
206	9.876	17.27	62.92	295.4	0.10890	0.07232	0.017560	0.019520
207	17.010	20.26	109.70	904.3	0.08772	0.07304	0.069500	0.053900
208	13.110	22.54	87.02	529.4	0.10020	0.14830	0.087050	0.051020
209	15.270	12.91	98.17	725.5	0.08182	0.06230	0.058920	0.031570
210	20.580	22.14	134.70	1290.0	0.09090	0.13480	0.164000	0.095610
211	11.840	18.94	75.51	428.0	0.08871	0.06900	0.026690	0.013930
212	28.110	18.47	188.50	2499.0	0.11420	0.15160	0.320100	0.159500
213	17.420	25.56	114.50	948.0	0.10060	0.11460	0.168200	0.065970
214	14.190	23.81	92.87	610.7	0.09463	0.13060	0.111500	0.064620
215	13.860	16.93	90.96	578.9	0.10260	0.15170	0.099010	0.056020
216	11.890	18.35	77.32	432.2	0.09363	0.11540	0.066360	0.031420
217	10.200	17.48	65.05	321.2	0.08054	0.05907	0.057740	0.010710
218	19.800	21.56	129.70	1230.0	0.09383	0.13060	0.127200	0.086910
219	19.530	32.47	128.00	1223.0	0.08420	0.11300	0.114500	0.066370
220	13.650	13.16	87.88	568.9	0.09646	0.08711	0.038880	0.025630
221	13.560	13.90	88.59	561.3	0.10510	0.11920	0.078600	0.044510
222	10.180	17.53	65.12	313.1	0.10610	0.08502	0.017680	0.019150
223	15.750	20.25	102.60	761.3	0.10250	0.12040	0.114700	0.064620
224	13.270	17.02	84.55	546.4	0.08445	0.04994	0.035540	0.024560
225	14.340	13.47	92.51	641.2	0.09906	0.07624	0.057240	0.046030
226	10.440	15.46	66.62	329.6	0.10530	0.07722	0.006643	0.012160
227	15.000	15.51	97.45	684.5	0.08371	0.10960	0.065050	0.037800
228	12.620	23.97	81.35	496.4	0.07903	0.07529	0.054380	0.020360
229	12.830	22.33	85.26	503.2	0.10880	0.17990	0.169500	0.068610
230	17.050	19.08	113.40	895.0	0.11410	0.15720	0.191000	0.109000
231	11.320	27.08	71.76	395.7	0.06883	0.03813	0.016330	0.003125
232	11.220	33.81	70.79	386.8	0.07780	0.03574	0.004967	0.006434
233	20.510	27.81	134.40	1319.0	0.09159	0.10740	0.155400	0.083400
234	9.567	15.91	60.21	279.6	0.08464	0.04087	0.016520	0.016670
235	14.030	21.25	89.79	603.4	0.09070	0.06945	0.014620	0.018960
236	23.210	26.97	153.50	1670.0	0.09509	0.16820	0.195000	0.123700
237	20.480	21.46	132.50	1306.0	0.08355	0.08348	0.090420	0.060220
238	14.220	27.85	92.55	623.9	0.08223	0.10390	0.110300	0.044080
239	17.460	39.28	113.40	920.6	0.09812	0.12980	0.141700	0.088110
240	13.640	15.60	87.38	575.3	0.09423	0.06630	0.047050	0.037310
241	12.420	15.04	78.61	476.5	0.07926	0.03393	0.010530	0.011080
242	11.300	18.19	73.93	389.4	0.09592	0.13250	0.154800	0.028540
243	13.750	23.77	88.54	590.0	0.08043	0.06807	0.046970	0.023440

244	19.400	23.50	129.10	1155.0	0.10270	0.15580	0.204900	0.088860
245	10.480	19.86	66.72	337.7	0.10700	0.05971	0.048310	0.030700
246	13.200	17.43	84.13	541.6	0.07215	0.04524	0.043360	0.011050
247	12.890	14.11	84.95	512.2	0.08760	0.13460	0.137400	0.039800
248	10.650	25.22	68.01	347.0	0.09657	0.07234	0.023790	0.016150
249	11.520	14.93	73.87	406.3	0.10130	0.07808	0.043280	0.029290
250	20.940	23.56	138.90	1364.0	0.10070	0.16060	0.271200	0.131000
251	11.500	18.45	73.28	407.4	0.09345	0.05991	0.026380	0.020690
252	19.730	19.82	130.70	1206.0	0.10620	0.18490	0.241700	0.097400
253	17.300	17.08	113.00	928.2	0.10080	0.10410	0.126600	0.083530
254	19.450	19.33	126.50	1169.0	0.10350	0.11880	0.137900	0.085910
255	13.960	17.05	91.43	602.4	0.10960	0.12790	0.097890	0.052460
256	19.550	28.77	133.60	1207.0	0.09260	0.20630	0.178400	0.114400
257	15.320	17.27	103.20	713.3	0.13350	0.22840	0.244800	0.124200
258	15.660	23.20	110.20	773.5	0.11090	0.31140	0.317600	0.137700
259	15.530	33.56	103.70	744.9	0.10630	0.16390	0.175100	0.083990
260	20.310	27.06	132.90	1288.0	0.10000	0.10880	0.151900	0.093330
261	17.350	23.06	111.00	933.1	0.08662	0.06290	0.028910	0.028370
262	17.290	22.13	114.40	947.8	0.08999	0.12730	0.096970	0.075070
263	15.610	19.38	100.00	758.6	0.07840	0.05616	0.042090	0.028470
264	17.190	22.07	111.60	928.3	0.09726	0.08995	0.090610	0.065270
265	20.730	31.12	135.70	1419.0	0.09469	0.11430	0.136700	0.086460
266	10.600	18.95	69.28	346.4	0.09688	0.11470	0.063870	0.026420
267	13.590	21.84	87.16	561.0	0.07956	0.08259	0.040720	0.021420
268	12.870	16.21	82.38	512.2	0.09425	0.06219	0.039000	0.016150
269	10.710	20.39	69.50	344.9	0.10820	0.12890	0.084480	0.028670
270	14.290	16.82	90.30	632.6	0.06429	0.02675	0.007250	0.006250
271	11.290	13.04	72.23	388.0	0.09834	0.07608	0.032650	0.027550
272	21.750	20.99	147.30	1491.0	0.09401	0.19610	0.219500	0.108800
273	9.742	15.67	61.50	289.9	0.09037	0.04689	0.011030	0.014070
274	17.930	24.48	115.20	998.9	0.08855	0.07027	0.056990	0.047440
275	11.890	17.36	76.20	435.6	0.12250	0.07210	0.059290	0.074040
276	11.330	14.16	71.79	396.6	0.09379	0.03872	0.001487	0.003333
277	18.810	19.98	120.90	1102.0	0.08923	0.05884	0.080200	0.058430
278	13.590	17.84	86.24	572.3	0.07948	0.04052	0.019970	0.012380
279	13.850	15.18	88.99	587.4	0.09516	0.07688	0.044790	0.037110
280	19.160	26.60	126.20	1138.0	0.10200	0.14530	0.192100	0.096640
281	11.740	14.02	74.24	427.3	0.07813	0.04340	0.022450	0.027630
282	19.400	18.18	127.20	1145.0	0.10370	0.14420	0.162600	0.094640

283	16.240	18.77	108.80	805.1	0.10660	0.18020	0.194800	0.090520
284	12.890	15.70	84.08	516.6	0.07818	0.09580	0.111500	0.033900
285	12.580	18.40	79.83	489.0	0.08393	0.04216	0.001860	0.002924
286	11.940	20.76	77.87	441.0	0.08605	0.10110	0.065740	0.037910
287	12.890	13.12	81.89	515.9	0.06955	0.03729	0.022600	0.011710
288	11.260	19.96	73.72	394.1	0.08020	0.11810	0.092740	0.055880
289	11.370	18.89	72.17	396.0	0.08713	0.05008	0.023990	0.021730
290	14.410	19.73	96.03	651.0	0.08757	0.16760	0.136200	0.066020
291	14.960	19.10	97.03	687.3	0.08992	0.09823	0.059400	0.048190
292	12.950	16.02	83.14	513.7	0.10050	0.07943	0.061550	0.033700
293	11.850	17.46	75.54	432.7	0.08372	0.05642	0.026880	0.022800
294	12.720	13.78	81.78	492.1	0.09667	0.08393	0.012880	0.019240
295	13.770	13.27	88.06	582.7	0.09198	0.06221	0.010630	0.019170
296	10.910	12.35	69.14	363.7	0.08518	0.04721	0.012360	0.013690
297	11.760	18.14	75.00	431.1	0.09968	0.05914	0.026850	0.035150
298	14.260	18.17	91.22	633.1	0.06576	0.05220	0.024750	0.013740
299	10.510	23.09	66.85	334.2	0.10150	0.06797	0.024950	0.018750
300	19.530	18.90	129.50	1217.0	0.11500	0.16420	0.219700	0.106200
301	12.460	19.89	80.43	471.3	0.08451	0.10140	0.068300	0.030990
302	20.090	23.86	134.70	1247.0	0.10800	0.18380	0.228300	0.128000
303	10.490	18.61	66.86	334.3	0.10680	0.06678	0.022970	0.017800
304	11.460	18.16	73.59	403.1	0.08853	0.07694	0.033440	0.015020
305	11.600	24.49	74.23	417.2	0.07474	0.05688	0.019740	0.013130
306	13.200	15.82	84.07	537.3	0.08511	0.05251	0.001461	0.003261
307	9.000	14.40	56.36	246.3	0.07005	0.03116	0.003681	0.003472
308	13.500	12.71	85.69	566.2	0.07376	0.03614	0.002758	0.004419
309	13.050	13.84	82.71	530.6	0.08352	0.03735	0.004559	0.008829
310	11.700	19.11	74.33	418.7	0.08814	0.05253	0.015830	0.011480
311	14.610	15.69	92.68	664.9	0.07618	0.03515	0.014470	0.018770
312	12.760	13.37	82.29	504.1	0.08794	0.07948	0.040520	0.025480
313	11.540	10.72	73.73	409.1	0.08597	0.05969	0.013670	0.008907
314	8.597	18.60	54.09	221.2	0.10740	0.05847	0.000000	0.000000
315	12.490	16.85	79.19	481.6	0.08511	0.03834	0.004473	0.006423
316	12.180	14.08	77.25	461.4	0.07734	0.03212	0.011230	0.005051
317	18.220	18.87	118.70	1027.0	0.09746	0.11170	0.113000	0.079500
318	9.042	18.90	60.07	244.5	0.09968	0.19720	0.197500	0.049080
319	12.430	17.00	78.60	477.3	0.07557	0.03454	0.013420	0.016990
320	10.250	16.18	66.52	324.2	0.10610	0.11110	0.067260	0.039650
321	20.160	19.66	131.10	1274.0	0.08020	0.08564	0.115500	0.077260

322	12.860	13.32	82.82	504.8	0.11340	0.08834	0.038000	0.034000
323	20.340	21.51	135.90	1264.0	0.11700	0.18750	0.256500	0.150400
324	12.200	15.21	78.01	457.9	0.08673	0.06545	0.019940	0.016920
325	12.670	17.30	81.25	489.9	0.10280	0.07664	0.031930	0.021070
326	14.110	12.88	90.03	616.5	0.09309	0.05306	0.017650	0.027330
327	12.030	17.93	76.09	446.0	0.07683	0.03892	0.001546	0.005592
328	16.270	20.71	106.90	813.7	0.11690	0.13190	0.147800	0.084880
329	16.260	21.88	107.50	826.8	0.11650	0.12830	0.179900	0.079810
330	16.030	15.51	105.80	793.2	0.09491	0.13710	0.120400	0.070410
331	12.980	19.35	84.52	514.0	0.09579	0.11250	0.071070	0.029500
332	11.220	19.86	71.94	387.3	0.10540	0.06779	0.005006	0.007583
333	11.250	14.78	71.38	390.0	0.08306	0.04458	0.000974	0.002941
334	12.300	19.02	77.88	464.4	0.08313	0.04202	0.007756	0.008535
335	17.060	21.00	111.80	918.6	0.11190	0.10560	0.150800	0.099340
336	12.990	14.23	84.08	514.3	0.09462	0.09965	0.037380	0.020980
337	18.770	21.43	122.90	1092.0	0.09116	0.14020	0.106000	0.060900
338	10.050	17.53	64.41	310.8	0.10070	0.07326	0.025110	0.017750
339	23.510	24.27	155.10	1747.0	0.10690	0.12830	0.230800	0.141000
340	14.420	16.54	94.15	641.2	0.09751	0.11390	0.080070	0.042230
341	9.606	16.84	61.64	280.5	0.08481	0.09228	0.084220	0.022920
342	11.060	14.96	71.49	373.9	0.10330	0.09097	0.053970	0.033410
343	19.680	21.68	129.90	1194.0	0.09797	0.13390	0.186300	0.110300
344	11.710	15.45	75.03	420.3	0.11500	0.07281	0.040060	0.032500
345	10.260	14.71	66.20	321.6	0.09882	0.09159	0.035810	0.020370
346	12.060	18.90	76.66	445.3	0.08386	0.05794	0.007510	0.008488
347	14.760	14.74	94.87	668.7	0.08875	0.07780	0.046080	0.035280
348	11.470	16.03	73.02	402.7	0.09076	0.05886	0.025870	0.023220
349	11.950	14.96	77.23	426.7	0.11580	0.12060	0.011710	0.017870
350	11.660	17.07	73.70	421.0	0.07561	0.03630	0.008306	0.011620
351	15.750	19.22	107.10	758.6	0.12430	0.23640	0.291400	0.124200
352	25.730	17.46	174.20	2010.0	0.11490	0.23630	0.336800	0.191300
353	15.080	25.74	98.00	716.6	0.10240	0.09769	0.123500	0.065530
354	11.140	14.07	71.24	384.6	0.07274	0.06064	0.045050	0.014710
355	12.560	19.07	81.92	485.8	0.08760	0.10380	0.103000	0.043910
356	13.050	18.59	85.09	512.0	0.10820	0.13040	0.096030	0.056030
357	13.870	16.21	88.52	593.7	0.08743	0.05492	0.015020	0.020880
358	8.878	15.49	56.74	241.0	0.08293	0.07698	0.047210	0.023810
359	9.436	18.32	59.82	278.6	0.10090	0.05956	0.027100	0.014060
360	12.540	18.07	79.42	491.9	0.07436	0.02650	0.001194	0.005449

361	13.300	21.57	85.24	546.1	0.08582	0.06373	0.033440	0.024240
362	12.760	18.84	81.87	496.6	0.09676	0.07952	0.026880	0.017810
363	16.500	18.29	106.60	838.1	0.09686	0.08468	0.058620	0.048350
364	13.400	16.95	85.48	552.4	0.07937	0.05696	0.021810	0.014730
365	20.440	21.78	133.80	1293.0	0.09150	0.11310	0.097990	0.077850
366	20.200	26.83	133.70	1234.0	0.09905	0.16690	0.164100	0.126500
367	12.210	18.02	78.31	458.4	0.09231	0.07175	0.043920	0.020270
368	21.710	17.25	140.90	1546.0	0.09384	0.08562	0.116800	0.084650
369	22.010	21.90	147.20	1482.0	0.10630	0.19540	0.244800	0.150100
370	16.350	23.29	109.00	840.4	0.09742	0.14970	0.181100	0.087730
371	15.190	13.21	97.65	711.8	0.07963	0.06934	0.033930	0.026570
372	21.370	15.10	141.30	1386.0	0.10010	0.15150	0.193200	0.125500
373	20.640	17.35	134.80	1335.0	0.09446	0.10760	0.152700	0.089410
374	13.690	16.07	87.84	579.1	0.08302	0.06374	0.025560	0.020310
375	16.170	16.07	106.30	788.5	0.09880	0.14380	0.066510	0.053970
376	10.570	20.22	70.15	338.3	0.09073	0.16600	0.228000	0.059410
377	13.460	28.21	85.89	562.1	0.07517	0.04726	0.012710	0.011170
378	13.660	15.15	88.27	580.6	0.08268	0.07548	0.042490	0.024710
379	11.080	18.83	73.30	361.6	0.12160	0.21540	0.168900	0.063670
380	11.270	12.96	73.16	386.3	0.12370	0.11110	0.079000	0.055500
381	11.040	14.93	70.67	372.7	0.07987	0.07079	0.035460	0.020740
382	12.050	22.72	78.75	447.8	0.06935	0.10730	0.079430	0.029780
383	12.390	17.48	80.64	462.9	0.10420	0.12970	0.058920	0.028800
384	13.280	13.72	85.79	541.8	0.08363	0.08575	0.050770	0.028640
385	14.600	23.29	93.97	664.7	0.08682	0.06636	0.083900	0.052710
386	12.210	14.09	78.78	462.0	0.08108	0.07823	0.068390	0.025340
387	13.880	16.16	88.37	596.6	0.07026	0.04831	0.020450	0.008507
388	11.270	15.50	73.38	392.0	0.08365	0.11140	0.100700	0.027570
389	19.550	23.21	128.90	1174.0	0.10100	0.13180	0.185600	0.102100
390	10.260	12.22	65.75	321.6	0.09996	0.07542	0.019230	0.019680
391	8.734	16.84	55.27	234.3	0.10390	0.07428	0.000000	0.000000
392	15.490	19.97	102.40	744.7	0.11600	0.15620	0.189100	0.091130
393	21.610	22.28	144.40	1407.0	0.11670	0.20870	0.281000	0.156200
394	12.100	17.72	78.07	446.2	0.10290	0.09758	0.047830	0.033260
395	14.060	17.18	89.75	609.1	0.08045	0.05361	0.026810	0.032510
396	13.510	18.89	88.10	558.1	0.10590	0.11470	0.085800	0.053810
397	12.800	17.46	83.05	508.3	0.08044	0.08895	0.073900	0.040830
398	11.060	14.83	70.31	378.2	0.07741	0.04768	0.027120	0.007246
399	11.800	17.26	75.26	431.9	0.09087	0.06232	0.028530	0.016380

400	17.910	21.02	124.40	994.0	0.12300	0.25760	0.318900	0.119800
401	11.930	10.91	76.14	442.7	0.08872	0.05242	0.026060	0.017960
402	12.960	18.29	84.18	525.2	0.07351	0.07899	0.040570	0.018830
403	12.940	16.17	83.18	507.6	0.09879	0.08836	0.032960	0.023900
404	12.340	14.95	78.29	469.1	0.08682	0.04571	0.021090	0.020540
405	10.940	18.59	70.39	370.0	0.10040	0.07460	0.049440	0.029320
406	16.140	14.86	104.30	800.0	0.09495	0.08501	0.055000	0.045280
407	12.850	21.37	82.63	514.5	0.07551	0.08316	0.061260	0.018670
408	17.990	20.66	117.80	991.7	0.10360	0.13040	0.120100	0.088240
409	12.270	17.92	78.41	466.1	0.08685	0.06526	0.032110	0.026530
410	11.360	17.57	72.49	399.8	0.08858	0.05313	0.027830	0.021000
411	11.040	16.83	70.92	373.2	0.10770	0.07804	0.030460	0.024800
412	9.397	21.68	59.75	268.8	0.07969	0.06053	0.037350	0.005128
413	14.990	22.11	97.53	693.7	0.08515	0.10250	0.068590	0.038760
414	15.130	29.81	96.71	719.5	0.08320	0.04605	0.046860	0.027390
415	11.890	21.17	76.39	433.8	0.09773	0.08120	0.025550	0.021790
416	9.405	21.70	59.60	271.2	0.10440	0.06159	0.020470	0.012570
417	15.500	21.08	102.90	803.1	0.11200	0.15710	0.152200	0.084810
418	12.700	12.17	80.88	495.0	0.08785	0.05794	0.023600	0.024020
419	11.160	21.41	70.95	380.3	0.10180	0.05978	0.008955	0.010760
420	11.570	19.04	74.20	409.7	0.08546	0.07722	0.054850	0.014280
421	14.690	13.98	98.22	656.1	0.10310	0.18360	0.145000	0.063000
422	11.610	16.02	75.46	408.2	0.10880	0.11680	0.070970	0.044970
423	13.660	19.13	89.46	575.3	0.09057	0.11470	0.096570	0.048120
424	9.742	19.12	61.93	289.7	0.10750	0.08333	0.008934	0.019670
425	10.030	21.28	63.19	307.3	0.08117	0.03912	0.002470	0.005159
426	10.480	14.98	67.49	333.6	0.09816	0.10130	0.063350	0.022180
427	10.800	21.98	68.79	359.9	0.08801	0.05743	0.036140	0.014040
428	11.130	16.62	70.47	381.1	0.08151	0.03834	0.013690	0.013700
429	12.720	17.67	80.98	501.3	0.07896	0.04522	0.014020	0.018350
430	14.900	22.53	102.10	685.0	0.09947	0.22250	0.273300	0.097110
431	12.400	17.68	81.47	467.8	0.10540	0.13160	0.077410	0.027990
432	20.180	19.54	133.80	1250.0	0.11330	0.14890	0.213300	0.125900
433	18.820	21.97	123.70	1110.0	0.10180	0.13890	0.159400	0.087440
434	14.860	16.94	94.89	673.7	0.08924	0.07074	0.033460	0.028770
435	13.980	19.62	91.12	599.5	0.10600	0.11330	0.112600	0.064630
436	12.870	19.54	82.67	509.2	0.09136	0.07883	0.017970	0.020900
437	14.040	15.98	89.78	611.2	0.08458	0.05895	0.035340	0.029440
438	13.850	19.60	88.68	592.6	0.08684	0.06330	0.013420	0.022930

439	14.020	15.66	89.59	606.5	0.07966	0.05581	0.020870	0.026520
440	10.970	17.20	71.73	371.5	0.08915	0.11130	0.094570	0.036130
441	17.270	25.42	112.40	928.8	0.08331	0.11090	0.120400	0.057360
442	13.780	15.79	88.37	585.9	0.08817	0.06718	0.010550	0.009937
443	10.570	18.32	66.82	340.9	0.08142	0.04462	0.019930	0.011110
444	18.030	16.85	117.50	990.0	0.08947	0.12320	0.109000	0.062540
445	11.990	24.89	77.61	441.3	0.10300	0.09218	0.054410	0.042740
446	17.750	28.03	117.30	981.6	0.09997	0.13140	0.169800	0.082930
447	14.800	17.66	95.88	674.8	0.09179	0.08890	0.040690	0.022600
448	14.530	19.34	94.25	659.7	0.08388	0.07800	0.088170	0.029250
449	21.100	20.52	138.10	1384.0	0.09684	0.11750	0.157200	0.115500
450	11.870	21.54	76.83	432.0	0.06613	0.10640	0.087770	0.023860
451	19.590	25.00	127.70	1191.0	0.10320	0.09871	0.165500	0.090630
452	12.000	28.23	76.77	442.5	0.08437	0.06450	0.040550	0.019450
453	14.530	13.98	93.86	644.2	0.10990	0.09242	0.068950	0.064950
454	12.620	17.15	80.62	492.9	0.08583	0.05430	0.029660	0.022720
455	13.380	30.72	86.34	557.2	0.09245	0.07426	0.028190	0.032640
456	11.630	29.29	74.87	415.1	0.09357	0.08574	0.071600	0.020170
457	13.210	25.25	84.10	537.9	0.08791	0.05205	0.027720	0.020680
458	13.000	25.13	82.61	520.2	0.08369	0.05073	0.012060	0.017620
459	9.755	28.20	61.68	290.9	0.07984	0.04626	0.015410	0.010430
460	17.080	27.15	111.20	930.9	0.09898	0.11100	0.100700	0.064310
461	27.420	26.27	186.90	2501.0	0.10840	0.19880	0.363500	0.168900
462	14.400	26.99	92.25	646.1	0.06995	0.05223	0.034760	0.017370
463	11.600	18.36	73.88	412.7	0.08508	0.05855	0.033670	0.017770
464	13.170	18.22	84.28	537.3	0.07466	0.05994	0.048590	0.028700
465	13.240	20.13	86.87	542.9	0.08284	0.12230	0.101000	0.028330
466	13.140	20.74	85.98	536.9	0.08675	0.10890	0.108500	0.035100
467	9.668	18.10	61.06	286.3	0.08311	0.05428	0.014790	0.005769
468	17.600	23.33	119.00	980.5	0.09289	0.20040	0.213600	0.100200
469	11.620	18.18	76.38	408.8	0.11750	0.14830	0.102000	0.055640
470	9.667	18.49	61.49	289.1	0.08946	0.06258	0.029480	0.015140
471	12.040	28.14	76.85	449.9	0.08752	0.06000	0.023670	0.023770
472	14.920	14.93	96.45	686.9	0.08098	0.08549	0.055390	0.032210
473	12.270	29.97	77.42	465.4	0.07699	0.03398	0.000000	0.000000
474	10.880	15.62	70.41	358.9	0.10070	0.10690	0.051150	0.015710
475	12.830	15.73	82.89	506.9	0.09040	0.08269	0.058350	0.030780
476	14.200	20.53	92.41	618.4	0.08931	0.11080	0.050630	0.030580
477	13.900	16.62	88.97	599.4	0.06828	0.05319	0.022240	0.013390

478	11.490	14.59	73.99	404.9	0.10460	0.08228	0.053080	0.019690
479	16.250	19.51	109.80	815.8	0.10260	0.18930	0.223600	0.091940
480	12.160	18.03	78.29	455.3	0.09087	0.07838	0.029160	0.015270
481	13.900	19.24	88.73	602.9	0.07991	0.05326	0.029950	0.020700
482	13.470	14.06	87.32	546.3	0.10710	0.11550	0.057860	0.052660
483	13.700	17.64	87.76	571.1	0.09950	0.07957	0.045480	0.031600
484	15.730	11.28	102.80	747.2	0.10430	0.12990	0.119100	0.062110
485	12.450	16.41	82.85	476.7	0.09514	0.15110	0.154400	0.048460
486	14.640	16.85	94.21	666.0	0.08641	0.06698	0.051920	0.027910
487	19.440	18.82	128.10	1167.0	0.10890	0.14480	0.225600	0.119400
488	11.680	16.17	75.49	420.5	0.11280	0.09263	0.042790	0.031320
489	16.690	20.20	107.10	857.6	0.07497	0.07112	0.036490	0.023070
490	12.250	22.44	78.18	466.5	0.08192	0.05200	0.017140	0.012610
491	17.850	13.23	114.60	992.1	0.07838	0.06217	0.044450	0.041780
492	18.010	20.56	118.40	1007.0	0.10010	0.12890	0.117000	0.077620
493	12.460	12.83	78.83	477.3	0.07372	0.04043	0.007173	0.011490
494	13.160	20.54	84.06	538.7	0.07335	0.05275	0.018000	0.012560
495	14.870	20.21	96.12	680.9	0.09587	0.08345	0.068240	0.049510
496	12.650	18.17	82.69	485.6	0.10760	0.13340	0.080170	0.050740
497	12.470	17.31	80.45	480.1	0.08928	0.07630	0.036090	0.023690
498	18.490	17.52	121.30	1068.0	0.10120	0.13170	0.149100	0.091830
499	20.590	21.24	137.80	1320.0	0.10850	0.16440	0.218800	0.112100
500	15.040	16.74	98.73	689.4	0.09883	0.13640	0.077210	0.061420
501	13.820	24.49	92.33	595.9	0.11620	0.16810	0.135700	0.067590
502	12.540	16.32	81.25	476.3	0.11580	0.10850	0.059280	0.032790
503	23.090	19.83	152.10	1682.0	0.09342	0.12750	0.167600	0.100300
504	9.268	12.87	61.49	248.7	0.16340	0.22390	0.097300	0.052520
505	9.676	13.14	64.12	272.5	0.12550	0.22040	0.118800	0.070380
506	12.220	20.04	79.47	453.1	0.10960	0.11520	0.081750	0.021660
507	11.060	17.12	71.25	366.5	0.11940	0.10710	0.040630	0.042680
508	16.300	15.70	104.70	819.8	0.09427	0.06712	0.055260	0.045630
509	15.460	23.95	103.80	731.3	0.11830	0.18700	0.203000	0.085200
510	11.740	14.69	76.31	426.0	0.08099	0.09661	0.067260	0.026390
511	14.810	14.70	94.66	680.7	0.08472	0.05016	0.034160	0.025410
512	13.400	20.52	88.64	556.7	0.11060	0.14690	0.144500	0.081720
513	14.580	13.66	94.29	658.8	0.09832	0.08918	0.082220	0.043490
514	15.050	19.07	97.26	701.9	0.09215	0.08597	0.074860	0.043350
515	11.340	18.61	72.76	391.2	0.10490	0.08499	0.043020	0.025940
516	18.310	20.58	120.80	1052.0	0.10680	0.12480	0.156900	0.094510

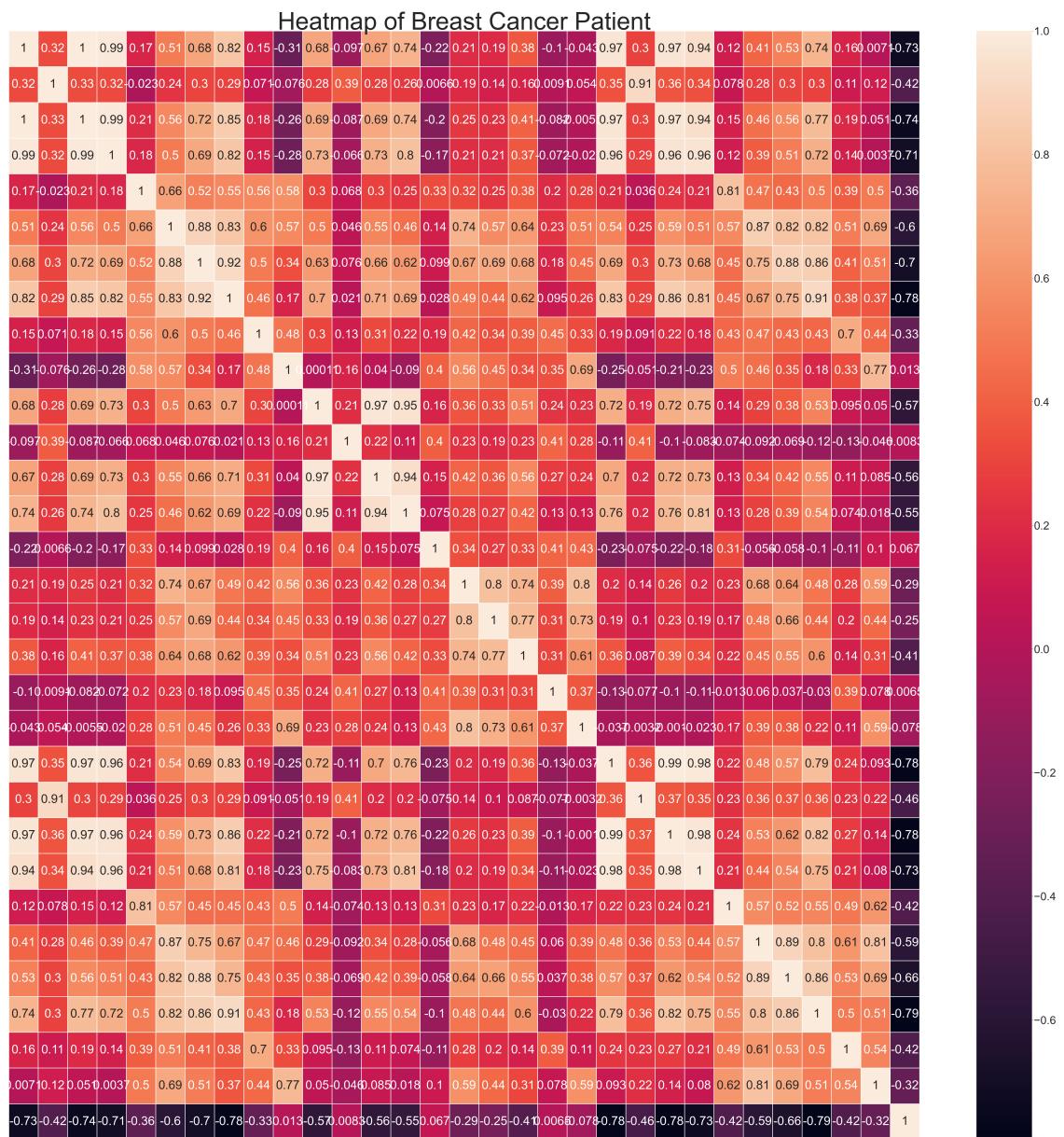
517	19.890	20.26	130.50	1214.0	0.10370	0.13100	0.141100	0.094310
518	12.880	18.22	84.45	493.1	0.12180	0.16610	0.048250	0.053030
519	12.750	16.70	82.51	493.8	0.11250	0.11170	0.038800	0.029950
520	9.295	13.90	59.96	257.8	0.13710	0.12250	0.033320	0.024210
521	24.630	21.60	165.50	1841.0	0.10300	0.21060	0.231000	0.147100
522	11.260	19.83	71.30	388.1	0.08511	0.04413	0.005067	0.005664
523	13.710	18.68	88.73	571.0	0.09916	0.10700	0.053850	0.037830
524	9.847	15.68	63.00	293.2	0.09492	0.08419	0.023300	0.024160
525	8.571	13.10	54.53	221.3	0.10360	0.07632	0.025650	0.015100
526	13.460	18.75	87.44	551.1	0.10750	0.11380	0.042010	0.031520
527	12.340	12.27	78.94	468.5	0.09003	0.06307	0.029580	0.026470
528	13.940	13.17	90.31	594.2	0.12480	0.09755	0.101000	0.066150
529	12.070	13.44	77.83	445.2	0.11000	0.09009	0.037810	0.027980
530	11.750	17.56	75.89	422.9	0.10730	0.09713	0.052820	0.044400
531	11.670	20.02	75.21	416.2	0.10160	0.09453	0.042000	0.021570
532	13.680	16.33	87.76	575.5	0.09277	0.07255	0.017520	0.018800
533	20.470	20.67	134.70	1299.0	0.09156	0.13130	0.152300	0.101500
534	10.960	17.62	70.79	365.6	0.09687	0.09752	0.052630	0.027880
535	20.550	20.86	137.80	1308.0	0.10460	0.17390	0.208500	0.132200
536	14.270	22.55	93.77	629.8	0.10380	0.11540	0.146300	0.061390
537	11.690	24.44	76.37	406.4	0.12360	0.15520	0.045150	0.045310
538	7.729	25.49	47.98	178.8	0.08098	0.04878	0.000000	0.000000
539	7.691	25.44	48.34	170.4	0.08668	0.11990	0.092520	0.013640
540	11.540	14.44	74.65	402.9	0.09984	0.11200	0.067370	0.025940
541	14.470	24.99	95.81	656.4	0.08837	0.12300	0.100900	0.038900
542	14.740	25.42	94.70	668.6	0.08275	0.07214	0.041050	0.030270
543	13.210	28.06	84.88	538.4	0.08671	0.06877	0.029870	0.032750
544	13.870	20.70	89.77	584.8	0.09578	0.10180	0.036880	0.023690
545	13.620	23.23	87.19	573.2	0.09246	0.06747	0.029740	0.024430
546	10.320	16.35	65.31	324.9	0.09434	0.04994	0.010120	0.005495
547	10.260	16.58	65.85	320.8	0.08877	0.08066	0.043580	0.024380
548	9.683	19.34	61.05	285.7	0.08491	0.05030	0.023370	0.009615
549	10.820	24.21	68.89	361.6	0.08192	0.06602	0.015480	0.008160
550	10.860	21.48	68.51	360.5	0.07431	0.04227	0.000000	0.000000
551	11.130	22.44	71.49	378.4	0.09566	0.08194	0.048240	0.022570
552	12.770	29.43	81.35	507.9	0.08276	0.04234	0.019970	0.014990
553	9.333	21.94	59.01	264.0	0.09240	0.05605	0.039960	0.012820
554	12.880	28.92	82.50	514.3	0.08123	0.05824	0.061950	0.023430
555	10.290	27.61	65.67	321.4	0.09030	0.07658	0.059990	0.027380

556	10.160	19.59	64.73	311.7	0.10030	0.07504	0.005025	0.011160
557	9.423	27.88	59.26	271.3	0.08123	0.04971	0.000000	0.000000
558	14.590	22.68	96.39	657.1	0.08473	0.13300	0.102900	0.037360
559	11.510	23.93	74.52	403.5	0.09261	0.10210	0.111200	0.041050
560	14.050	27.15	91.38	600.4	0.09929	0.11260	0.044620	0.043040
561	11.200	29.37	70.67	386.0	0.07449	0.03558	0.000000	0.000000
562	15.220	30.62	103.40	716.9	0.10480	0.20870	0.255000	0.094290
563	20.920	25.09	143.00	1347.0	0.10990	0.22360	0.317400	0.147400
564	21.560	22.39	142.00	1479.0	0.11100	0.11590	0.243900	0.138900
565	20.130	28.25	131.20	1261.0	0.09780	0.10340	0.144000	0.097910
566	16.600	28.08	108.30	858.1	0.08455	0.10230	0.092510	0.053020
567	20.600	29.33	140.10	1265.0	0.11780	0.27700	0.351400	0.152000
568	7.760	24.54	47.92	181.0	0.05263	0.04362	0.000000	0.000000

569 rows × 31 columns

In [156...]

```
plt.figure(figsize=(100,100))
ax = sns.heatmap(cancer_df.corr(), annot=True, linewidth=3)
ax.tick_params(size=10, color='w', labelsize=10, labelcolor='w')
plt.title("Heatmap of Breast Cancer Patient", fontsize=120)
plt.show()
```



## Seaborn Pairplot

In [157...]

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [158...]

```
from sklearn.datasets import load_breast_cancer
cancer_datasets = load_breast_cancer()
cancer_datasets
```

Out[158...]

```
{'data': array([[1.799e+01, 1.038e+01, 1.228e+02, ..., 2.654e-01, 4.601e-01,
   1.189e-01],
   [2.057e+01, 1.777e+01, 1.329e+02, ..., 1.860e-01, 2.750e-01,
   8.902e-02],
   [1.969e+01, 2.125e+01, 1.300e+02, ..., 2.430e-01, 3.613e-01,
   8.758e-02],
   ...,
   [1.660e+01, 2.808e+01, 1.083e+02, ..., 1.418e-01, 2.218e-01,
   1.111e-01]]}
```



```

0.0      0.396\n      concave points (standard error):      0.0      0.053\n
symmetry (standard error):          0.008  0.079\n
(standard error):    0.001  0.03\n      radius (worst):      fractal dimension
7.93     36.04\n      texture (worst):      12.02   49.54\n
perimeter (worst):           50.41   251.2\n
185.2    4254.0\n      smoothness (worst):      area (worst):
compactness (worst):          0.027   1.058\n      0.071   0.223\n
t):                      0.0     1.252\n      concave points (worst):
0.0      0.291\n      symmetry (worst):      0.156   0.664\n
fractal dimension (worst):      0.055   0.208\n
=====
===== ===== =====\n\n      :Missing Attribute Values: None
\n\n      :Class Distribution: 212 - Malignant, 357 - Benign\n\n      :Creator: Dr. William H. Wolberg, W. Nick Street, Olvi L. Mangasarian\n\n      :Donor: Nick Street\n\n      :Date: November, 1995\n\nThis is a copy of UCI M
L Breast Cancer Wisconsin (Diagnostic) datasets.\nhttps://goo.gl/U2Uwz2\n
\nFeatures are computed from a digitized image of a fine needle\naspirate
(FNA) of a breast mass. They describe\ncharacteristics of the cell nucle
i present in the image.\n\nSeparating plane described above was obtained
using\nMultisurface Method-Tree (MSM-T) [K. P. Bennett, "Decision Tree\nC
onstruction Via Linear Programming." Proceedings of the 4th\nMidwest Arti
ficial Intelligence and Cognitive Science Society,\npp. 97-101, 1992], a
classification method which uses linear\nprogramming to construct a decis
ion tree. Relevant features\nwere selected using an exhaustive search in
the space of 1-4\nfeatures and 1-3 separating planes.\n\nThe actual linea
r program used to obtain the separating plane\nin the 3-dimensional space
is that described in:\n[K. P. Bennett and O. L. Mangasarian: "Robust Line
ar\nProgramming Discrimination of Two Linearly Inseparable Sets",\nOptimi
zation Methods and Software 1, 1992, 23-34].\n\nThis database is also ava
ilable through the UW CS ftp server:\n\nftp ftp.cs.wisc.edu\ncd math-pro
g/cpo-dataset/machine-learn/WDBC/\n\n.. topic:: References\n\n      - W.N. S
treet, W.H. Wolberg and O.L. Mangasarian. Nuclear feature extraction \n
for breast tumor diagnosis. IS&T/SPIE 1993 International Symposium on \n
Electronic Imaging: Science and Technology, volume 1905, pages 861-870,\n
San Jose, CA, 1993.\n      - O.L. Mangasarian, W.N. Street and W.H. Wolberg.
Breast cancer diagnosis and \n      prognosis via linear programming. Oper
ations Research, 43(4), pages 570-577, \n      July-August 1995.\n      - W.
H. Wolberg, W.N. Street, and O.L. Mangasarian. Machine learning technique
s\n      to diagnose breast cancer from fine-needle aspirates. Cancer Lett
ers 77 (1994) \n      163-171.',

'feature_names': array(['mean radius', 'mean texture', 'mean perimeter',
'mean area',
      'mean smoothness', 'mean compactness', 'mean concavity',
      'mean concave points', 'mean symmetry', 'mean fractal dimension',
      'radius error', 'texture error', 'perimeter error', 'area error',
      'smoothness error', 'compactness error', 'concavity error',
      'concave points error', 'symmetry error',
      'fractal dimension error', 'worst radius', 'worst texture',
      'worst perimeter', 'worst area', 'worst smoothness',
      'worst compactness', 'worst concavity', 'worst concave points',
      'worst symmetry', 'worst fractal dimension'], dtype='<U23'),
'filename': 'c:\\\\users\\\\nemade\\\\python 37\\\\lib\\\\site-packages\\\\sklearn
\\\\datasets\\\\data\\\\breast_cancer.csv'}

```

sns.pairplot( data, \*, hue=None, hue\_order=None, palette=None, vars=None, x\_vars=None, y\_vars=None,
kind='scatter', diag\_kind='auto', markers=None, height=2.5, aspect=1, corner=False, dropna=False,
plot\_kws=None, diag\_kws=None, grid\_kws=None, size=None, Parameters ----- data :
`pandas.DataFrame` Tidy (long-form) dataframe where each column is a variable and each row is an
observation. hue : name of variable in ``data`` Variable in ``data`` to map plot aspects to different colors.
hue\_order : list of strings Order for the levels of the hue variable in the palette palette : dict or seaborn
color palette Set of colors for mapping the ``hue`` variable. If a dict, keys should be values in the ``hue``
variable. vars : list of variable names Variables within ``data`` to use, otherwise use every column with a
numeric datatype. {x, y}\_vars : lists of variable names Variables within ``data`` to use separately for the
rows and columns of the figure; i.e. to make a non-square plot. kind : {'scatter', 'kde', 'hist', 'reg'} Kind of

plot to make. `diag_kind` : {'auto', 'hist', 'kde', None} Kind of plot for the diagonal subplots. If 'auto', choose based on whether or not ``hue`` is used. `markers` : single matplotlib marker code or list Either the marker to use for all scatterplot points or a list of markers with a length the same as the number of levels in the hue variable so that differently colored points will also have different scatterplot markers. `height` : scalar Height (in inches) of each facet. `aspect` : scalar Aspect \* height gives the width (in inches) of each facet. `corner` : bool If True, don't add axes to the upper (off-diagonal) triangle of the grid, making this a "corner" plot. `dropna` : boolean Drop missing values from the data before plotting. `{plot, diag, grid}_kws` : dicts Dictionaries of keyword arguments. ```plot_kws``` are passed to the bivariate plotting function, ```diag_kws``` are passed to the univariate plotting function, and ```grid_kws``` are passed to the `:class:`PairGrid`` constructor. Returns ----- `grid` : `:class:`PairGrid`` Returns the underlying `:class:`PairGrid`` instance for further tweaking.

In [159...]

```
cancer_df = pd.DataFrame(np.c_[cancer_dataset['data'], cancer_dataset['target']]
                           columns = np.append(cancer_dataset['feature_names'],
                                                ['target']))
cancer_df
```

Out[159...]

	mean radius	mean texture	mean perimeter	mean area	mean smoothness	mean compactness	mean concavity	mean concave points	symmetry	fractal dimension
0	17.990	10.38	122.80	1001.0	0.11840	0.27760	0.300100	0.147100	0.132900	0.205900
1	20.570	17.77	132.90	1326.0	0.08474	0.07864	0.086900	0.070170	0.120800	0.269200
2	19.690	21.25	130.00	1203.0	0.10960	0.15990	0.197400	0.127900	0.148800	0.245900
3	11.420	20.38	77.58	386.1	0.14250	0.28390	0.241400	0.105200	0.138500	0.243100
4	20.290	14.34	135.10	1297.0	0.10030	0.13280	0.198000	0.104300	0.147100	0.243100
5	12.450	15.70	82.57	477.1	0.12780	0.17000	0.157800	0.080890	0.138500	0.243100
6	18.250	19.98	119.60	1040.0	0.09463	0.10900	0.112700	0.074000	0.147100	0.243100
7	13.710	20.83	90.20	577.9	0.11890	0.16450	0.093660	0.059850	0.138500	0.243100
8	13.000	21.82	87.50	519.8	0.12730	0.19320	0.185900	0.093530	0.147100	0.243100
9	12.460	24.04	83.97	475.9	0.11860	0.23960	0.227300	0.085430	0.138500	0.243100
10	16.020	23.24	102.70	797.8	0.08206	0.06669	0.032990	0.033230	0.147100	0.243100
11	15.780	17.89	103.60	781.0	0.09710	0.12920	0.099540	0.066060	0.138500	0.243100
12	19.170	24.80	132.40	1123.0	0.09740	0.24580	0.206500	0.111800	0.147100	0.243100
13	15.850	23.95	103.70	782.7	0.08401	0.10020	0.099380	0.053640	0.138500	0.243100
14	13.730	22.61	93.60	578.3	0.11310	0.22930	0.212800	0.080250	0.138500	0.243100
15	14.540	27.54	96.73	658.8	0.11390	0.15950	0.163900	0.073640	0.138500	0.243100
16	14.680	20.13	94.74	684.5	0.09867	0.07200	0.073950	0.052590	0.138500	0.243100
17	16.130	20.68	108.10	798.8	0.11700	0.20220	0.172200	0.102800	0.147100	0.243100
18	19.810	22.15	130.00	1260.0	0.09831	0.10270	0.147900	0.094980	0.138500	0.243100
19	13.540	14.36	87.46	566.3	0.09779	0.08129	0.066640	0.047810	0.138500	0.243100
20	13.080	15.71	85.63	520.0	0.10750	0.12700	0.045680	0.031100	0.138500	0.243100
21	9.504	12.44	60.34	273.9	0.10240	0.06492	0.029560	0.020760	0.138500	0.243100
22	15.340	14.26	102.50	704.4	0.10730	0.21350	0.207700	0.097560	0.138500	0.243100
23	21.160	23.04	137.20	1404.0	0.09428	0.10220	0.109700	0.086320	0.138500	0.243100
24	16.650	21.38	110.00	904.6	0.11210	0.14570	0.152500	0.091700	0.138500	0.243100
25	17.140	16.40	116.00	912.7	0.11860	0.22760	0.222900	0.140100	0.138500	0.243100

26	14.580	21.53	97.41	644.8	0.10540	0.18680	0.142500	0.087830
27	18.610	20.25	122.10	1094.0	0.09440	0.10660	0.149000	0.077310
28	15.300	25.27	102.40	732.4	0.10820	0.16970	0.168300	0.087510
29	17.570	15.05	115.00	955.1	0.09847	0.11570	0.098750	0.079530
30	18.630	25.11	124.80	1088.0	0.10640	0.18870	0.231900	0.124400
31	11.840	18.70	77.93	440.6	0.11090	0.15160	0.121800	0.051820
32	17.020	23.98	112.80	899.3	0.11970	0.14960	0.241700	0.120300
33	19.270	26.47	127.90	1162.0	0.09401	0.17190	0.165700	0.075930
34	16.130	17.88	107.00	807.2	0.10400	0.15590	0.135400	0.077520
35	16.740	21.59	110.10	869.5	0.09610	0.13360	0.134800	0.060180
36	14.250	21.72	93.63	633.0	0.09823	0.10980	0.131900	0.055980
37	13.030	18.42	82.61	523.8	0.08983	0.03766	0.025620	0.029230
38	14.990	25.20	95.54	698.8	0.09387	0.05131	0.023980	0.028990
39	13.480	20.82	88.40	559.2	0.10160	0.12550	0.106300	0.054390
40	13.440	21.58	86.18	563.0	0.08162	0.06031	0.031100	0.020310
41	10.950	21.35	71.90	371.1	0.12270	0.12180	0.104400	0.056690
42	19.070	24.81	128.30	1104.0	0.09081	0.21900	0.210700	0.099610
43	13.280	20.28	87.32	545.2	0.10410	0.14360	0.098470	0.061580
44	13.170	21.81	85.42	531.5	0.09714	0.10470	0.082590	0.052520
45	18.650	17.60	123.70	1076.0	0.10990	0.16860	0.197400	0.100900
46	8.196	16.84	51.71	201.9	0.08600	0.05943	0.015880	0.005917
47	13.170	18.66	85.98	534.6	0.11580	0.12310	0.122600	0.073400
48	12.050	14.63	78.04	449.3	0.10310	0.09092	0.065920	0.027490
49	13.490	22.30	86.91	561.0	0.08752	0.07698	0.047510	0.033840
50	11.760	21.60	74.72	427.9	0.08637	0.04966	0.016570	0.011150
51	13.640	16.34	87.21	571.8	0.07685	0.06059	0.018570	0.017230
52	11.940	18.24	75.71	437.6	0.08261	0.04751	0.019720	0.013490
53	18.220	18.70	120.30	1033.0	0.11480	0.14850	0.177200	0.106000
54	15.100	22.02	97.26	712.8	0.09056	0.07081	0.052530	0.033340
55	11.520	18.75	73.34	409.0	0.09524	0.05473	0.030360	0.022780
56	19.210	18.57	125.50	1152.0	0.10530	0.12670	0.132300	0.089940
57	14.710	21.59	95.55	656.9	0.11370	0.13650	0.129300	0.081230
58	13.050	19.31	82.61	527.2	0.08060	0.03789	0.000692	0.004167
59	8.618	11.79	54.34	224.5	0.09752	0.05272	0.020610	0.007799
60	10.170	14.88	64.55	311.9	0.11340	0.08061	0.010840	0.012900
61	8.598	20.98	54.66	221.8	0.12430	0.08963	0.030000	0.009259
62	14.250	22.15	96.42	645.7	0.10490	0.20080	0.213500	0.086530
63	9.173	13.86	59.20	260.9	0.07721	0.08751	0.059880	0.021800
64	12.680	23.84	82.69	499.0	0.11220	0.12620	0.112800	0.068730

65	14.780	23.94	97.40	668.3	0.11720	0.14790	0.126700	0.090290
66	9.465	21.01	60.11	269.4	0.10440	0.07773	0.021720	0.015040
67	11.310	19.04	71.80	394.1	0.08139	0.04701	0.037090	0.022300
68	9.029	17.33	58.79	250.5	0.10660	0.14130	0.313000	0.043750
69	12.780	16.49	81.37	502.5	0.09831	0.05234	0.036530	0.028640
70	18.940	21.31	123.60	1130.0	0.09009	0.10290	0.108000	0.079510
71	8.888	14.64	58.79	244.0	0.09783	0.15310	0.086060	0.028720
72	17.200	24.52	114.20	929.4	0.10710	0.18300	0.169200	0.079440
73	13.800	15.79	90.43	584.1	0.10070	0.12800	0.077890	0.050690
74	12.310	16.52	79.19	470.9	0.09172	0.06829	0.033720	0.022720
75	16.070	19.65	104.10	817.7	0.09168	0.08424	0.097690	0.066380
76	13.530	10.94	87.91	559.2	0.12910	0.10470	0.068770	0.065560
77	18.050	16.15	120.20	1006.0	0.10650	0.21460	0.168400	0.108000
78	20.180	23.97	143.70	1245.0	0.12860	0.34540	0.375400	0.160400
79	12.860	18.00	83.19	506.3	0.09934	0.09546	0.038890	0.023150
80	11.450	20.97	73.81	401.5	0.11020	0.09362	0.045910	0.022330
81	13.340	15.86	86.49	520.0	0.10780	0.15350	0.116900	0.069870
82	25.220	24.91	171.50	1878.0	0.10630	0.26650	0.333900	0.184500
83	19.100	26.29	129.10	1132.0	0.12150	0.17910	0.193700	0.146900
84	12.000	15.65	76.95	443.3	0.09723	0.07165	0.041510	0.018630
85	18.460	18.52	121.10	1075.0	0.09874	0.10530	0.133500	0.087950
86	14.480	21.46	94.25	648.2	0.09444	0.09947	0.120400	0.049380
87	19.020	24.59	122.00	1076.0	0.09029	0.12060	0.146800	0.082710
88	12.360	21.80	79.78	466.1	0.08772	0.09445	0.060150	0.037450
89	14.640	15.24	95.77	651.9	0.11320	0.13390	0.099660	0.070640
90	14.620	24.02	94.57	662.7	0.08974	0.08606	0.031020	0.029570
91	15.370	22.76	100.20	728.2	0.09200	0.10360	0.112200	0.074830
92	13.270	14.76	84.74	551.7	0.07355	0.05055	0.032610	0.026480
93	13.450	18.30	86.60	555.1	0.10220	0.08165	0.039740	0.027800
94	15.060	19.83	100.30	705.6	0.10390	0.15530	0.170000	0.088150
95	20.260	23.03	132.40	1264.0	0.09078	0.13130	0.146500	0.086830
96	12.180	17.84	77.79	451.1	0.10450	0.07057	0.024900	0.029410
97	9.787	19.94	62.11	294.5	0.10240	0.05301	0.006829	0.007937
98	11.600	12.84	74.34	412.6	0.08983	0.07525	0.041960	0.033500
99	14.420	19.77	94.48	642.5	0.09752	0.11410	0.093880	0.058390
100	13.610	24.98	88.05	582.7	0.09488	0.08511	0.086250	0.044890
101	6.981	13.43	43.79	143.5	0.11700	0.07568	0.000000	0.000000
102	12.180	20.52	77.22	458.7	0.08013	0.04038	0.023830	0.017700
103	9.876	19.40	63.95	298.3	0.10050	0.09697	0.061540	0.030290

104	10.490	19.29	67.41	336.1	0.09989	0.08578	0.029950	0.012010
105	13.110	15.56	87.21	530.2	0.13980	0.17650	0.207100	0.096010
106	11.640	18.33	75.17	412.5	0.11420	0.10170	0.070700	0.034850
107	12.360	18.54	79.01	466.7	0.08477	0.06815	0.026430	0.019210
108	22.270	19.67	152.80	1509.0	0.13260	0.27680	0.426400	0.182300
109	11.340	21.26	72.48	396.5	0.08759	0.06575	0.051330	0.018990
110	9.777	16.99	62.50	290.2	0.10370	0.08404	0.043340	0.017780
111	12.630	20.76	82.15	480.4	0.09933	0.12090	0.106500	0.060210
112	14.260	19.65	97.83	629.9	0.07837	0.22330	0.300300	0.077980
113	10.510	20.19	68.64	334.2	0.11220	0.13030	0.064760	0.030680
114	8.726	15.83	55.84	230.9	0.11500	0.08201	0.041320	0.019240
115	11.930	21.53	76.53	438.6	0.09768	0.07849	0.033280	0.020080
116	8.950	15.76	58.74	245.2	0.09462	0.12430	0.092630	0.023080
117	14.870	16.67	98.64	682.5	0.11620	0.16490	0.169000	0.089230
118	15.780	22.91	105.70	782.6	0.11550	0.17520	0.213300	0.094790
119	17.950	20.01	114.20	982.0	0.08402	0.06722	0.072930	0.055960
120	11.410	10.82	73.34	403.3	0.09373	0.06685	0.035120	0.026230
121	18.660	17.12	121.40	1077.0	0.10540	0.11000	0.145700	0.086650
122	24.250	20.20	166.20	1761.0	0.14470	0.28670	0.426800	0.201200
123	14.500	10.89	94.28	640.7	0.11010	0.10990	0.088420	0.057780
124	13.370	16.39	86.10	553.5	0.07115	0.07325	0.080920	0.028000
125	13.850	17.21	88.44	588.7	0.08785	0.06136	0.014200	0.011410
126	13.610	24.69	87.76	572.6	0.09258	0.07862	0.052850	0.030850
127	19.000	18.91	123.40	1138.0	0.08217	0.08028	0.092710	0.056270
128	15.100	16.39	99.58	674.5	0.11500	0.18070	0.113800	0.085340
129	19.790	25.12	130.40	1192.0	0.10150	0.15890	0.254500	0.114900
130	12.190	13.29	79.08	455.8	0.10660	0.09509	0.028550	0.028820
131	15.460	19.48	101.70	748.9	0.10920	0.12230	0.146600	0.080870
132	16.160	21.54	106.20	809.8	0.10080	0.12840	0.104300	0.056130
133	15.710	13.93	102.00	761.7	0.09462	0.09462	0.071350	0.059330
134	18.450	21.91	120.20	1075.0	0.09430	0.09709	0.115300	0.068470
135	12.770	22.47	81.72	506.3	0.09055	0.05761	0.047110	0.027040
136	11.710	16.67	74.72	423.6	0.10510	0.06095	0.035920	0.026000
137	11.430	15.39	73.06	399.8	0.09639	0.06889	0.035030	0.028750
138	14.950	17.57	96.85	678.1	0.11670	0.13050	0.153900	0.086240
139	11.280	13.39	73.00	384.8	0.11640	0.11360	0.046350	0.047960
140	9.738	11.97	61.24	288.5	0.09250	0.04102	0.000000	0.000000
141	16.110	18.05	105.10	813.0	0.09721	0.11370	0.094470	0.059430
142	11.430	17.31	73.66	398.0	0.10920	0.09486	0.020310	0.018610

143	12.900	15.92	83.74	512.2	0.08677	0.09509	0.048940	0.030880
144	10.750	14.97	68.26	355.3	0.07793	0.05139	0.022510	0.007875
145	11.900	14.65	78.11	432.8	0.11520	0.12960	0.037100	0.030030
146	11.800	16.58	78.99	432.0	0.10910	0.17000	0.165900	0.074150
147	14.950	18.77	97.84	689.5	0.08138	0.11670	0.090500	0.035620
148	14.440	15.18	93.97	640.1	0.09970	0.10210	0.084870	0.055320
149	13.740	17.91	88.12	585.0	0.07944	0.06376	0.028810	0.013290
150	13.000	20.78	83.51	519.4	0.11350	0.07589	0.031360	0.026450
151	8.219	20.70	53.27	203.9	0.09405	0.13050	0.132100	0.021680
152	9.731	15.34	63.78	300.2	0.10720	0.15990	0.410800	0.078570
153	11.150	13.08	70.87	381.9	0.09754	0.05113	0.019820	0.017860
154	13.150	15.34	85.31	538.9	0.09384	0.08498	0.092930	0.034830
155	12.250	17.94	78.27	460.3	0.08654	0.06679	0.038850	0.023310
156	17.680	20.74	117.40	963.7	0.11150	0.16650	0.185500	0.105400
157	16.840	19.46	108.40	880.2	0.07445	0.07223	0.051500	0.027710
158	12.060	12.74	76.84	448.6	0.09311	0.05241	0.019720	0.019630
159	10.900	12.96	68.69	366.8	0.07515	0.03718	0.003090	0.006588
160	11.750	20.18	76.10	419.8	0.10890	0.11410	0.068430	0.037380
161	19.190	15.94	126.30	1157.0	0.08694	0.11850	0.119300	0.096670
162	19.590	18.15	130.70	1214.0	0.11200	0.16660	0.250800	0.128600
163	12.340	22.22	79.85	464.5	0.10120	0.10150	0.053700	0.028220
164	23.270	22.04	152.10	1686.0	0.08439	0.11450	0.132400	0.097020
165	14.970	19.76	95.50	690.2	0.08421	0.05352	0.019470	0.019390
166	10.800	9.71	68.77	357.6	0.09594	0.05736	0.025310	0.016980
167	16.780	18.80	109.30	886.3	0.08865	0.09182	0.084220	0.065760
168	17.470	24.68	116.10	984.6	0.10490	0.16030	0.215900	0.104300
169	14.970	16.95	96.22	685.9	0.09855	0.07885	0.026020	0.037810
170	12.320	12.39	78.85	464.1	0.10280	0.06981	0.039870	0.037000
171	13.430	19.63	85.84	565.4	0.09048	0.06288	0.058580	0.034380
172	15.460	11.89	102.50	736.9	0.12570	0.15550	0.203200	0.109700
173	11.080	14.71	70.21	372.7	0.10060	0.05743	0.023630	0.025830
174	10.660	15.15	67.49	349.6	0.08792	0.04302	0.000000	0.000000
175	8.671	14.45	54.42	227.2	0.09138	0.04276	0.000000	0.000000
176	9.904	18.06	64.60	302.4	0.09699	0.12940	0.130700	0.037160
177	16.460	20.11	109.30	832.9	0.09831	0.15560	0.179300	0.088660
178	13.010	22.22	82.01	526.4	0.06251	0.01938	0.001595	0.001852
179	12.810	13.06	81.29	508.8	0.08739	0.03774	0.009193	0.013300
180	27.220	21.87	182.10	2250.0	0.10940	0.19140	0.287100	0.187800
181	21.090	26.57	142.70	1311.0	0.11410	0.28320	0.248700	0.149600

182	15.700	20.31	101.20	766.6	0.09597	0.08799	0.065930	0.051890
183	11.410	14.92	73.53	402.0	0.09059	0.08155	0.061810	0.023610
184	15.280	22.41	98.92	710.6	0.09057	0.10520	0.053750	0.032630
185	10.080	15.11	63.76	317.5	0.09267	0.04695	0.001597	0.002404
186	18.310	18.58	118.60	1041.0	0.08588	0.08468	0.081690	0.058140
187	11.710	17.19	74.68	420.3	0.09774	0.06141	0.038090	0.032390
188	11.810	17.39	75.27	428.9	0.10070	0.05562	0.023530	0.015530
189	12.300	15.90	78.83	463.7	0.08080	0.07253	0.038440	0.016540
190	14.220	23.12	94.37	609.9	0.10750	0.24130	0.198100	0.066180
191	12.770	21.41	82.02	507.4	0.08749	0.06601	0.031120	0.028640
192	9.720	18.22	60.73	288.1	0.06950	0.02344	0.000000	0.000000
193	12.340	26.86	81.15	477.4	0.10340	0.13530	0.108500	0.045620
194	14.860	23.21	100.40	671.4	0.10440	0.19800	0.169700	0.088780
195	12.910	16.33	82.53	516.4	0.07941	0.05366	0.038730	0.023770
196	13.770	22.29	90.63	588.9	0.12000	0.12670	0.138500	0.065260
197	18.080	21.84	117.40	1024.0	0.07371	0.08642	0.110300	0.057780
198	19.180	22.49	127.50	1148.0	0.08523	0.14280	0.111400	0.067720
199	14.450	20.22	94.49	642.7	0.09872	0.12060	0.118000	0.059800
200	12.230	19.56	78.54	461.0	0.09586	0.08087	0.041870	0.041070
201	17.540	19.32	115.10	951.6	0.08968	0.11980	0.103600	0.074880
202	23.290	26.67	158.90	1685.0	0.11410	0.20840	0.352300	0.162000
203	13.810	23.75	91.56	597.8	0.13230	0.17680	0.155800	0.091760
204	12.470	18.60	81.09	481.9	0.09965	0.10580	0.080050	0.038210
205	15.120	16.68	98.78	716.6	0.08876	0.09588	0.075500	0.040790
206	9.876	17.27	62.92	295.4	0.10890	0.07232	0.017560	0.019520
207	17.010	20.26	109.70	904.3	0.08772	0.07304	0.069500	0.053900
208	13.110	22.54	87.02	529.4	0.10020	0.14830	0.087050	0.051020
209	15.270	12.91	98.17	725.5	0.08182	0.06230	0.058920	0.031570
210	20.580	22.14	134.70	1290.0	0.09090	0.13480	0.164000	0.095610
211	11.840	18.94	75.51	428.0	0.08871	0.06900	0.026690	0.013930
212	28.110	18.47	188.50	2499.0	0.11420	0.15160	0.320100	0.159500
213	17.420	25.56	114.50	948.0	0.10060	0.11460	0.168200	0.065970
214	14.190	23.81	92.87	610.7	0.09463	0.13060	0.111500	0.064620
215	13.860	16.93	90.96	578.9	0.10260	0.15170	0.099010	0.056020
216	11.890	18.35	77.32	432.2	0.09363	0.11540	0.066360	0.031420
217	10.200	17.48	65.05	321.2	0.08054	0.05907	0.057740	0.010710
218	19.800	21.56	129.70	1230.0	0.09383	0.13060	0.127200	0.086910
219	19.530	32.47	128.00	1223.0	0.08420	0.11300	0.114500	0.066370
220	13.650	13.16	87.88	568.9	0.09646	0.08711	0.038880	0.025630

221	13.560	13.90	88.59	561.3	0.10510	0.11920	0.078600	0.044510
222	10.180	17.53	65.12	313.1	0.10610	0.08502	0.017680	0.019150
223	15.750	20.25	102.60	761.3	0.10250	0.12040	0.114700	0.064620
224	13.270	17.02	84.55	546.4	0.08445	0.04994	0.035540	0.024560
225	14.340	13.47	92.51	641.2	0.09906	0.07624	0.057240	0.046030
226	10.440	15.46	66.62	329.6	0.10530	0.07722	0.006643	0.012160
227	15.000	15.51	97.45	684.5	0.08371	0.10960	0.065050	0.037800
228	12.620	23.97	81.35	496.4	0.07903	0.07529	0.054380	0.020360
229	12.830	22.33	85.26	503.2	0.10880	0.17990	0.169500	0.068610
230	17.050	19.08	113.40	895.0	0.11410	0.15720	0.191000	0.109000
231	11.320	27.08	71.76	395.7	0.06883	0.03813	0.016330	0.003125
232	11.220	33.81	70.79	386.8	0.07780	0.03574	0.004967	0.006434
233	20.510	27.81	134.40	1319.0	0.09159	0.10740	0.155400	0.083400
234	9.567	15.91	60.21	279.6	0.08464	0.04087	0.016520	0.016670
235	14.030	21.25	89.79	603.4	0.09070	0.06945	0.014620	0.018960
236	23.210	26.97	153.50	1670.0	0.09509	0.16820	0.195000	0.123700
237	20.480	21.46	132.50	1306.0	0.08355	0.08348	0.090420	0.060220
238	14.220	27.85	92.55	623.9	0.08223	0.10390	0.110300	0.044080
239	17.460	39.28	113.40	920.6	0.09812	0.12980	0.141700	0.088110
240	13.640	15.60	87.38	575.3	0.09423	0.06630	0.047050	0.037310
241	12.420	15.04	78.61	476.5	0.07926	0.03393	0.010530	0.011080
242	11.300	18.19	73.93	389.4	0.09592	0.13250	0.154800	0.028540
243	13.750	23.77	88.54	590.0	0.08043	0.06807	0.046970	0.023440
244	19.400	23.50	129.10	1155.0	0.10270	0.15580	0.204900	0.088860
245	10.480	19.86	66.72	337.7	0.10700	0.05971	0.048310	0.030700
246	13.200	17.43	84.13	541.6	0.07215	0.04524	0.043360	0.011050
247	12.890	14.11	84.95	512.2	0.08760	0.13460	0.137400	0.039800
248	10.650	25.22	68.01	347.0	0.09657	0.07234	0.023790	0.016150
249	11.520	14.93	73.87	406.3	0.10130	0.07808	0.043280	0.029290
250	20.940	23.56	138.90	1364.0	0.10070	0.16060	0.271200	0.131000
251	11.500	18.45	73.28	407.4	0.09345	0.05991	0.026380	0.020690
252	19.730	19.82	130.70	1206.0	0.10620	0.18490	0.241700	0.097400
253	17.300	17.08	113.00	928.2	0.10080	0.10410	0.126600	0.083530
254	19.450	19.33	126.50	1169.0	0.10350	0.11880	0.137900	0.085910
255	13.960	17.05	91.43	602.4	0.10960	0.12790	0.097890	0.052460
256	19.550	28.77	133.60	1207.0	0.09260	0.20630	0.178400	0.114400
257	15.320	17.27	103.20	713.3	0.13350	0.22840	0.244800	0.124200
258	15.660	23.20	110.20	773.5	0.11090	0.31140	0.317600	0.137700
259	15.530	33.56	103.70	744.9	0.10630	0.16390	0.175100	0.083990

260	20.310	27.06	132.90	1288.0	0.10000	0.10880	0.151900	0.093330
261	17.350	23.06	111.00	933.1	0.08662	0.06290	0.028910	0.028370
262	17.290	22.13	114.40	947.8	0.08999	0.12730	0.096970	0.075070
263	15.610	19.38	100.00	758.6	0.07840	0.05616	0.042090	0.028470
264	17.190	22.07	111.60	928.3	0.09726	0.08995	0.090610	0.065270
265	20.730	31.12	135.70	1419.0	0.09469	0.11430	0.136700	0.086460
266	10.600	18.95	69.28	346.4	0.09688	0.11470	0.063870	0.026420
267	13.590	21.84	87.16	561.0	0.07956	0.08259	0.040720	0.021420
268	12.870	16.21	82.38	512.2	0.09425	0.06219	0.039000	0.016150
269	10.710	20.39	69.50	344.9	0.10820	0.12890	0.084480	0.028670
270	14.290	16.82	90.30	632.6	0.06429	0.02675	0.007250	0.006250
271	11.290	13.04	72.23	388.0	0.09834	0.07608	0.032650	0.027550
272	21.750	20.99	147.30	1491.0	0.09401	0.19610	0.219500	0.108800
273	9.742	15.67	61.50	289.9	0.09037	0.04689	0.011030	0.014070
274	17.930	24.48	115.20	998.9	0.08855	0.07027	0.056990	0.047440
275	11.890	17.36	76.20	435.6	0.12250	0.07210	0.059290	0.074040
276	11.330	14.16	71.79	396.6	0.09379	0.03872	0.001487	0.003333
277	18.810	19.98	120.90	1102.0	0.08923	0.05884	0.080200	0.058430
278	13.590	17.84	86.24	572.3	0.07948	0.04052	0.019970	0.012380
279	13.850	15.18	88.99	587.4	0.09516	0.07688	0.044790	0.037110
280	19.160	26.60	126.20	1138.0	0.10200	0.14530	0.192100	0.096640
281	11.740	14.02	74.24	427.3	0.07813	0.04340	0.022450	0.027630
282	19.400	18.18	127.20	1145.0	0.10370	0.14420	0.162600	0.094640
283	16.240	18.77	108.80	805.1	0.10660	0.18020	0.194800	0.090520
284	12.890	15.70	84.08	516.6	0.07818	0.09580	0.111500	0.033900
285	12.580	18.40	79.83	489.0	0.08393	0.04216	0.001860	0.002924
286	11.940	20.76	77.87	441.0	0.08605	0.10110	0.065740	0.037910
287	12.890	13.12	81.89	515.9	0.06955	0.03729	0.022600	0.011710
288	11.260	19.96	73.72	394.1	0.08020	0.11810	0.092740	0.055880
289	11.370	18.89	72.17	396.0	0.08713	0.05008	0.023990	0.021730
290	14.410	19.73	96.03	651.0	0.08757	0.16760	0.136200	0.066020
291	14.960	19.10	97.03	687.3	0.08992	0.09823	0.059400	0.048190
292	12.950	16.02	83.14	513.7	0.10050	0.07943	0.061550	0.033700
293	11.850	17.46	75.54	432.7	0.08372	0.05642	0.026880	0.022800
294	12.720	13.78	81.78	492.1	0.09667	0.08393	0.012880	0.019240
295	13.770	13.27	88.06	582.7	0.09198	0.06221	0.010630	0.019170
296	10.910	12.35	69.14	363.7	0.08518	0.04721	0.012360	0.013690
297	11.760	18.14	75.00	431.1	0.09968	0.05914	0.026850	0.035150
298	14.260	18.17	91.22	633.1	0.06576	0.05220	0.024750	0.013740

299	10.510	23.09	66.85	334.2	0.10150	0.06797	0.024950	0.018750
300	19.530	18.90	129.50	1217.0	0.11500	0.16420	0.219700	0.106200
301	12.460	19.89	80.43	471.3	0.08451	0.10140	0.068300	0.030990
302	20.090	23.86	134.70	1247.0	0.10800	0.18380	0.228300	0.128000
303	10.490	18.61	66.86	334.3	0.10680	0.06678	0.022970	0.017800
304	11.460	18.16	73.59	403.1	0.08853	0.07694	0.033440	0.015020
305	11.600	24.49	74.23	417.2	0.07474	0.05688	0.019740	0.013130
306	13.200	15.82	84.07	537.3	0.08511	0.05251	0.001461	0.003261
307	9.000	14.40	56.36	246.3	0.07005	0.03116	0.003681	0.003472
308	13.500	12.71	85.69	566.2	0.07376	0.03614	0.002758	0.004419
309	13.050	13.84	82.71	530.6	0.08352	0.03735	0.004559	0.008829
310	11.700	19.11	74.33	418.7	0.08814	0.05253	0.015830	0.011480
311	14.610	15.69	92.68	664.9	0.07618	0.03515	0.014470	0.018770
312	12.760	13.37	82.29	504.1	0.08794	0.07948	0.040520	0.025480
313	11.540	10.72	73.73	409.1	0.08597	0.05969	0.013670	0.008907
314	8.597	18.60	54.09	221.2	0.10740	0.05847	0.000000	0.000000
315	12.490	16.85	79.19	481.6	0.08511	0.03834	0.004473	0.006423
316	12.180	14.08	77.25	461.4	0.07734	0.03212	0.011230	0.005051
317	18.220	18.87	118.70	1027.0	0.09746	0.11170	0.113000	0.079500
318	9.042	18.90	60.07	244.5	0.09968	0.19720	0.197500	0.049080
319	12.430	17.00	78.60	477.3	0.07557	0.03454	0.013420	0.016990
320	10.250	16.18	66.52	324.2	0.10610	0.11110	0.067260	0.039650
321	20.160	19.66	131.10	1274.0	0.08020	0.08564	0.115500	0.077260
322	12.860	13.32	82.82	504.8	0.11340	0.08834	0.038000	0.034000
323	20.340	21.51	135.90	1264.0	0.11700	0.18750	0.256500	0.150400
324	12.200	15.21	78.01	457.9	0.08673	0.06545	0.019940	0.016920
325	12.670	17.30	81.25	489.9	0.10280	0.07664	0.031930	0.021070
326	14.110	12.88	90.03	616.5	0.09309	0.05306	0.017650	0.027330
327	12.030	17.93	76.09	446.0	0.07683	0.03892	0.001546	0.005592
328	16.270	20.71	106.90	813.7	0.11690	0.13190	0.147800	0.084880
329	16.260	21.88	107.50	826.8	0.11650	0.12830	0.179900	0.079810
330	16.030	15.51	105.80	793.2	0.09491	0.13710	0.120400	0.070410
331	12.980	19.35	84.52	514.0	0.09579	0.11250	0.071070	0.029500
332	11.220	19.86	71.94	387.3	0.10540	0.06779	0.005006	0.007583
333	11.250	14.78	71.38	390.0	0.08306	0.04458	0.000974	0.002941
334	12.300	19.02	77.88	464.4	0.08313	0.04202	0.007756	0.008535
335	17.060	21.00	111.80	918.6	0.11190	0.10560	0.150800	0.099340
336	12.990	14.23	84.08	514.3	0.09462	0.09965	0.037380	0.020980
337	18.770	21.43	122.90	1092.0	0.09116	0.14020	0.106000	0.060900

338	10.050	17.53	64.41	310.8	0.10070	0.07326	0.025110	0.017750
339	23.510	24.27	155.10	1747.0	0.10690	0.12830	0.230800	0.141000
340	14.420	16.54	94.15	641.2	0.09751	0.11390	0.080070	0.042230
341	9.606	16.84	61.64	280.5	0.08481	0.09228	0.084220	0.022920
342	11.060	14.96	71.49	373.9	0.10330	0.09097	0.053970	0.033410
343	19.680	21.68	129.90	1194.0	0.09797	0.13390	0.186300	0.110300
344	11.710	15.45	75.03	420.3	0.11500	0.07281	0.040060	0.032500
345	10.260	14.71	66.20	321.6	0.09882	0.09159	0.035810	0.020370
346	12.060	18.90	76.66	445.3	0.08386	0.05794	0.007510	0.008488
347	14.760	14.74	94.87	668.7	0.08875	0.07780	0.046080	0.035280
348	11.470	16.03	73.02	402.7	0.09076	0.05886	0.025870	0.023220
349	11.950	14.96	77.23	426.7	0.11580	0.12060	0.011710	0.017870
350	11.660	17.07	73.70	421.0	0.07561	0.03630	0.008306	0.011620
351	15.750	19.22	107.10	758.6	0.12430	0.23640	0.291400	0.124200
352	25.730	17.46	174.20	2010.0	0.11490	0.23630	0.336800	0.191300
353	15.080	25.74	98.00	716.6	0.10240	0.09769	0.123500	0.065530
354	11.140	14.07	71.24	384.6	0.07274	0.06064	0.045050	0.014710
355	12.560	19.07	81.92	485.8	0.08760	0.10380	0.103000	0.043910
356	13.050	18.59	85.09	512.0	0.10820	0.13040	0.096030	0.056030
357	13.870	16.21	88.52	593.7	0.08743	0.05492	0.015020	0.020880
358	8.878	15.49	56.74	241.0	0.08293	0.07698	0.047210	0.023810
359	9.436	18.32	59.82	278.6	0.10090	0.05956	0.027100	0.014060
360	12.540	18.07	79.42	491.9	0.07436	0.02650	0.001194	0.005449
361	13.300	21.57	85.24	546.1	0.08582	0.06373	0.033440	0.024240
362	12.760	18.84	81.87	496.6	0.09676	0.07952	0.026880	0.017810
363	16.500	18.29	106.60	838.1	0.09686	0.08468	0.058620	0.048350
364	13.400	16.95	85.48	552.4	0.07937	0.05696	0.021810	0.014730
365	20.440	21.78	133.80	1293.0	0.09150	0.11310	0.097990	0.077850
366	20.200	26.83	133.70	1234.0	0.09905	0.16690	0.164100	0.126500
367	12.210	18.02	78.31	458.4	0.09231	0.07175	0.043920	0.020270
368	21.710	17.25	140.90	1546.0	0.09384	0.08562	0.116800	0.084650
369	22.010	21.90	147.20	1482.0	0.10630	0.19540	0.244800	0.150100
370	16.350	23.29	109.00	840.4	0.09742	0.14970	0.181100	0.087730
371	15.190	13.21	97.65	711.8	0.07963	0.06934	0.033930	0.026570
372	21.370	15.10	141.30	1386.0	0.10010	0.15150	0.193200	0.125500
373	20.640	17.35	134.80	1335.0	0.09446	0.10760	0.152700	0.089410
374	13.690	16.07	87.84	579.1	0.08302	0.06374	0.025560	0.020310
375	16.170	16.07	106.30	788.5	0.09880	0.14380	0.066510	0.053970
376	10.570	20.22	70.15	338.3	0.09073	0.16600	0.228000	0.059410

377	13.460	28.21	85.89	562.1	0.07517	0.04726	0.012710	0.011170
378	13.660	15.15	88.27	580.6	0.08268	0.07548	0.042490	0.024710
379	11.080	18.83	73.30	361.6	0.12160	0.21540	0.168900	0.063670
380	11.270	12.96	73.16	386.3	0.12370	0.11110	0.079000	0.055500
381	11.040	14.93	70.67	372.7	0.07987	0.07079	0.035460	0.020740
382	12.050	22.72	78.75	447.8	0.06935	0.10730	0.079430	0.029780
383	12.390	17.48	80.64	462.9	0.10420	0.12970	0.058920	0.028800
384	13.280	13.72	85.79	541.8	0.08363	0.08575	0.050770	0.028640
385	14.600	23.29	93.97	664.7	0.08682	0.06636	0.083900	0.052710
386	12.210	14.09	78.78	462.0	0.08108	0.07823	0.068390	0.025340
387	13.880	16.16	88.37	596.6	0.07026	0.04831	0.020450	0.008507
388	11.270	15.50	73.38	392.0	0.08365	0.11140	0.100700	0.027570
389	19.550	23.21	128.90	1174.0	0.10100	0.13180	0.185600	0.102100
390	10.260	12.22	65.75	321.6	0.09996	0.07542	0.019230	0.019680
391	8.734	16.84	55.27	234.3	0.10390	0.07428	0.000000	0.000000
392	15.490	19.97	102.40	744.7	0.11600	0.15620	0.189100	0.091130
393	21.610	22.28	144.40	1407.0	0.11670	0.20870	0.281000	0.156200
394	12.100	17.72	78.07	446.2	0.10290	0.09758	0.047830	0.033260
395	14.060	17.18	89.75	609.1	0.08045	0.05361	0.026810	0.032510
396	13.510	18.89	88.10	558.1	0.10590	0.11470	0.085800	0.053810
397	12.800	17.46	83.05	508.3	0.08044	0.08895	0.073900	0.040830
398	11.060	14.83	70.31	378.2	0.07741	0.04768	0.027120	0.007246
399	11.800	17.26	75.26	431.9	0.09087	0.06232	0.028530	0.016380
400	17.910	21.02	124.40	994.0	0.12300	0.25760	0.318900	0.119800
401	11.930	10.91	76.14	442.7	0.08872	0.05242	0.026060	0.017960
402	12.960	18.29	84.18	525.2	0.07351	0.07899	0.040570	0.018830
403	12.940	16.17	83.18	507.6	0.09879	0.08836	0.032960	0.023900
404	12.340	14.95	78.29	469.1	0.08682	0.04571	0.021090	0.020540
405	10.940	18.59	70.39	370.0	0.10040	0.07460	0.049440	0.029320
406	16.140	14.86	104.30	800.0	0.09495	0.08501	0.055000	0.045280
407	12.850	21.37	82.63	514.5	0.07551	0.08316	0.061260	0.018670
408	17.990	20.66	117.80	991.7	0.10360	0.13040	0.120100	0.088240
409	12.270	17.92	78.41	466.1	0.08685	0.06526	0.032110	0.026530
410	11.360	17.57	72.49	399.8	0.08858	0.05313	0.027830	0.021000
411	11.040	16.83	70.92	373.2	0.10770	0.07804	0.030460	0.024800
412	9.397	21.68	59.75	268.8	0.07969	0.06053	0.037350	0.005128
413	14.990	22.11	97.53	693.7	0.08515	0.10250	0.068590	0.038760
414	15.130	29.81	96.71	719.5	0.08320	0.04605	0.046860	0.027390
415	11.890	21.17	76.39	433.8	0.09773	0.08120	0.025550	0.021790

416	9.405	21.70	59.60	271.2	0.10440	0.06159	0.020470	0.012570
417	15.500	21.08	102.90	803.1	0.11200	0.15710	0.152200	0.084810
418	12.700	12.17	80.88	495.0	0.08785	0.05794	0.023600	0.024020
419	11.160	21.41	70.95	380.3	0.10180	0.05978	0.008955	0.010760
420	11.570	19.04	74.20	409.7	0.08546	0.07722	0.054850	0.014280
421	14.690	13.98	98.22	656.1	0.10310	0.18360	0.145000	0.063000
422	11.610	16.02	75.46	408.2	0.10880	0.11680	0.070970	0.044970
423	13.660	19.13	89.46	575.3	0.09057	0.11470	0.096570	0.048120
424	9.742	19.12	61.93	289.7	0.10750	0.08333	0.008934	0.019670
425	10.030	21.28	63.19	307.3	0.08117	0.03912	0.002470	0.005159
426	10.480	14.98	67.49	333.6	0.09816	0.10130	0.063350	0.022180
427	10.800	21.98	68.79	359.9	0.08801	0.05743	0.036140	0.014040
428	11.130	16.62	70.47	381.1	0.08151	0.03834	0.013690	0.013700
429	12.720	17.67	80.98	501.3	0.07896	0.04522	0.014020	0.018350
430	14.900	22.53	102.10	685.0	0.09947	0.22250	0.273300	0.097110
431	12.400	17.68	81.47	467.8	0.10540	0.13160	0.077410	0.027990
432	20.180	19.54	133.80	1250.0	0.11330	0.14890	0.213300	0.125900
433	18.820	21.97	123.70	1110.0	0.10180	0.13890	0.159400	0.087440
434	14.860	16.94	94.89	673.7	0.08924	0.07074	0.033460	0.028770
435	13.980	19.62	91.12	599.5	0.10600	0.11330	0.112600	0.064630
436	12.870	19.54	82.67	509.2	0.09136	0.07883	0.017970	0.020900
437	14.040	15.98	89.78	611.2	0.08458	0.05895	0.035340	0.029440
438	13.850	19.60	88.68	592.6	0.08684	0.06330	0.013420	0.022930
439	14.020	15.66	89.59	606.5	0.07966	0.05581	0.020870	0.026520
440	10.970	17.20	71.73	371.5	0.08915	0.11130	0.094570	0.036130
441	17.270	25.42	112.40	928.8	0.08331	0.11090	0.120400	0.057360
442	13.780	15.79	88.37	585.9	0.08817	0.06718	0.010550	0.009937
443	10.570	18.32	66.82	340.9	0.08142	0.04462	0.019930	0.011110
444	18.030	16.85	117.50	990.0	0.08947	0.12320	0.109000	0.062540
445	11.990	24.89	77.61	441.3	0.10300	0.09218	0.054410	0.042740
446	17.750	28.03	117.30	981.6	0.09997	0.13140	0.169800	0.082930
447	14.800	17.66	95.88	674.8	0.09179	0.08890	0.040690	0.022600
448	14.530	19.34	94.25	659.7	0.08388	0.07800	0.088170	0.029250
449	21.100	20.52	138.10	1384.0	0.09684	0.11750	0.157200	0.115500
450	11.870	21.54	76.83	432.0	0.06613	0.10640	0.087770	0.023860
451	19.590	25.00	127.70	1191.0	0.10320	0.09871	0.165500	0.090630
452	12.000	28.23	76.77	442.5	0.08437	0.06450	0.040550	0.019450
453	14.530	13.98	93.86	644.2	0.10990	0.09242	0.068950	0.064950
454	12.620	17.15	80.62	492.9	0.08583	0.05430	0.029660	0.022720

455	13.380	30.72	86.34	557.2	0.09245	0.07426	0.028190	0.032640
456	11.630	29.29	74.87	415.1	0.09357	0.08574	0.071600	0.020170
457	13.210	25.25	84.10	537.9	0.08791	0.05205	0.027720	0.020680
458	13.000	25.13	82.61	520.2	0.08369	0.05073	0.012060	0.017620
459	9.755	28.20	61.68	290.9	0.07984	0.04626	0.015410	0.010430
460	17.080	27.15	111.20	930.9	0.09898	0.11100	0.100700	0.064310
461	27.420	26.27	186.90	2501.0	0.10840	0.19880	0.363500	0.168900
462	14.400	26.99	92.25	646.1	0.06995	0.05223	0.034760	0.017370
463	11.600	18.36	73.88	412.7	0.08508	0.05855	0.033670	0.017770
464	13.170	18.22	84.28	537.3	0.07466	0.05994	0.048590	0.028700
465	13.240	20.13	86.87	542.9	0.08284	0.12230	0.101000	0.028330
466	13.140	20.74	85.98	536.9	0.08675	0.10890	0.108500	0.035100
467	9.668	18.10	61.06	286.3	0.08311	0.05428	0.014790	0.005769
468	17.600	23.33	119.00	980.5	0.09289	0.20040	0.213600	0.100200
469	11.620	18.18	76.38	408.8	0.11750	0.14830	0.102000	0.055640
470	9.667	18.49	61.49	289.1	0.08946	0.06258	0.029480	0.015140
471	12.040	28.14	76.85	449.9	0.08752	0.06000	0.023670	0.023770
472	14.920	14.93	96.45	686.9	0.08098	0.08549	0.055390	0.032210
473	12.270	29.97	77.42	465.4	0.07699	0.03398	0.000000	0.000000
474	10.880	15.62	70.41	358.9	0.10070	0.10690	0.051150	0.015710
475	12.830	15.73	82.89	506.9	0.09040	0.08269	0.058350	0.030780
476	14.200	20.53	92.41	618.4	0.08931	0.11080	0.050630	0.030580
477	13.900	16.62	88.97	599.4	0.06828	0.05319	0.022240	0.013390
478	11.490	14.59	73.99	404.9	0.10460	0.08228	0.053080	0.019690
479	16.250	19.51	109.80	815.8	0.10260	0.18930	0.223600	0.091940
480	12.160	18.03	78.29	455.3	0.09087	0.07838	0.029160	0.015270
481	13.900	19.24	88.73	602.9	0.07991	0.05326	0.029950	0.020700
482	13.470	14.06	87.32	546.3	0.10710	0.11550	0.057860	0.052660
483	13.700	17.64	87.76	571.1	0.09950	0.07957	0.045480	0.031600
484	15.730	11.28	102.80	747.2	0.10430	0.12990	0.119100	0.062110
485	12.450	16.41	82.85	476.7	0.09514	0.15110	0.154400	0.048460
486	14.640	16.85	94.21	666.0	0.08641	0.06698	0.051920	0.027910
487	19.440	18.82	128.10	1167.0	0.10890	0.14480	0.225600	0.119400
488	11.680	16.17	75.49	420.5	0.11280	0.09263	0.042790	0.031320
489	16.690	20.20	107.10	857.6	0.07497	0.07112	0.036490	0.023070
490	12.250	22.44	78.18	466.5	0.08192	0.05200	0.017140	0.012610
491	17.850	13.23	114.60	992.1	0.07838	0.06217	0.044450	0.041780
492	18.010	20.56	118.40	1007.0	0.10010	0.12890	0.117000	0.077620
493	12.460	12.83	78.83	477.3	0.07372	0.04043	0.007173	0.011490

494	13.160	20.54	84.06	538.7	0.07335	0.05275	0.018000	0.012560
495	14.870	20.21	96.12	680.9	0.09587	0.08345	0.068240	0.049510
496	12.650	18.17	82.69	485.6	0.10760	0.13340	0.080170	0.050740
497	12.470	17.31	80.45	480.1	0.08928	0.07630	0.036090	0.023690
498	18.490	17.52	121.30	1068.0	0.10120	0.13170	0.149100	0.091830
499	20.590	21.24	137.80	1320.0	0.10850	0.16440	0.218800	0.112100
500	15.040	16.74	98.73	689.4	0.09883	0.13640	0.077210	0.061420
501	13.820	24.49	92.33	595.9	0.11620	0.16810	0.135700	0.067590
502	12.540	16.32	81.25	476.3	0.11580	0.10850	0.059280	0.032790
503	23.090	19.83	152.10	1682.0	0.09342	0.12750	0.167600	0.100300
504	9.268	12.87	61.49	248.7	0.16340	0.22390	0.097300	0.052520
505	9.676	13.14	64.12	272.5	0.12550	0.22040	0.118800	0.070380
506	12.220	20.04	79.47	453.1	0.10960	0.11520	0.081750	0.021660
507	11.060	17.12	71.25	366.5	0.11940	0.10710	0.040630	0.042680
508	16.300	15.70	104.70	819.8	0.09427	0.06712	0.055260	0.045630
509	15.460	23.95	103.80	731.3	0.11830	0.18700	0.203000	0.085200
510	11.740	14.69	76.31	426.0	0.08099	0.09661	0.067260	0.026390
511	14.810	14.70	94.66	680.7	0.08472	0.05016	0.034160	0.025410
512	13.400	20.52	88.64	556.7	0.11060	0.14690	0.144500	0.081720
513	14.580	13.66	94.29	658.8	0.09832	0.08918	0.082220	0.043490
514	15.050	19.07	97.26	701.9	0.09215	0.08597	0.074860	0.043350
515	11.340	18.61	72.76	391.2	0.10490	0.08499	0.043020	0.025940
516	18.310	20.58	120.80	1052.0	0.10680	0.12480	0.156900	0.094510
517	19.890	20.26	130.50	1214.0	0.10370	0.13100	0.141100	0.094310
518	12.880	18.22	84.45	493.1	0.12180	0.16610	0.048250	0.053030
519	12.750	16.70	82.51	493.8	0.11250	0.11170	0.038800	0.029950
520	9.295	13.90	59.96	257.8	0.13710	0.12250	0.033320	0.024210
521	24.630	21.60	165.50	1841.0	0.10300	0.21060	0.231000	0.147100
522	11.260	19.83	71.30	388.1	0.08511	0.04413	0.005067	0.005664
523	13.710	18.68	88.73	571.0	0.09916	0.10700	0.053850	0.037830
524	9.847	15.68	63.00	293.2	0.09492	0.08419	0.023300	0.024160
525	8.571	13.10	54.53	221.3	0.10360	0.07632	0.025650	0.015100
526	13.460	18.75	87.44	551.1	0.10750	0.11380	0.042010	0.031520
527	12.340	12.27	78.94	468.5	0.09003	0.06307	0.029580	0.026470
528	13.940	13.17	90.31	594.2	0.12480	0.09755	0.101000	0.066150
529	12.070	13.44	77.83	445.2	0.11000	0.09009	0.037810	0.027980
530	11.750	17.56	75.89	422.9	0.10730	0.09713	0.052820	0.044400
531	11.670	20.02	75.21	416.2	0.10160	0.09453	0.042000	0.021570
532	13.680	16.33	87.76	575.5	0.09277	0.07255	0.017520	0.018800

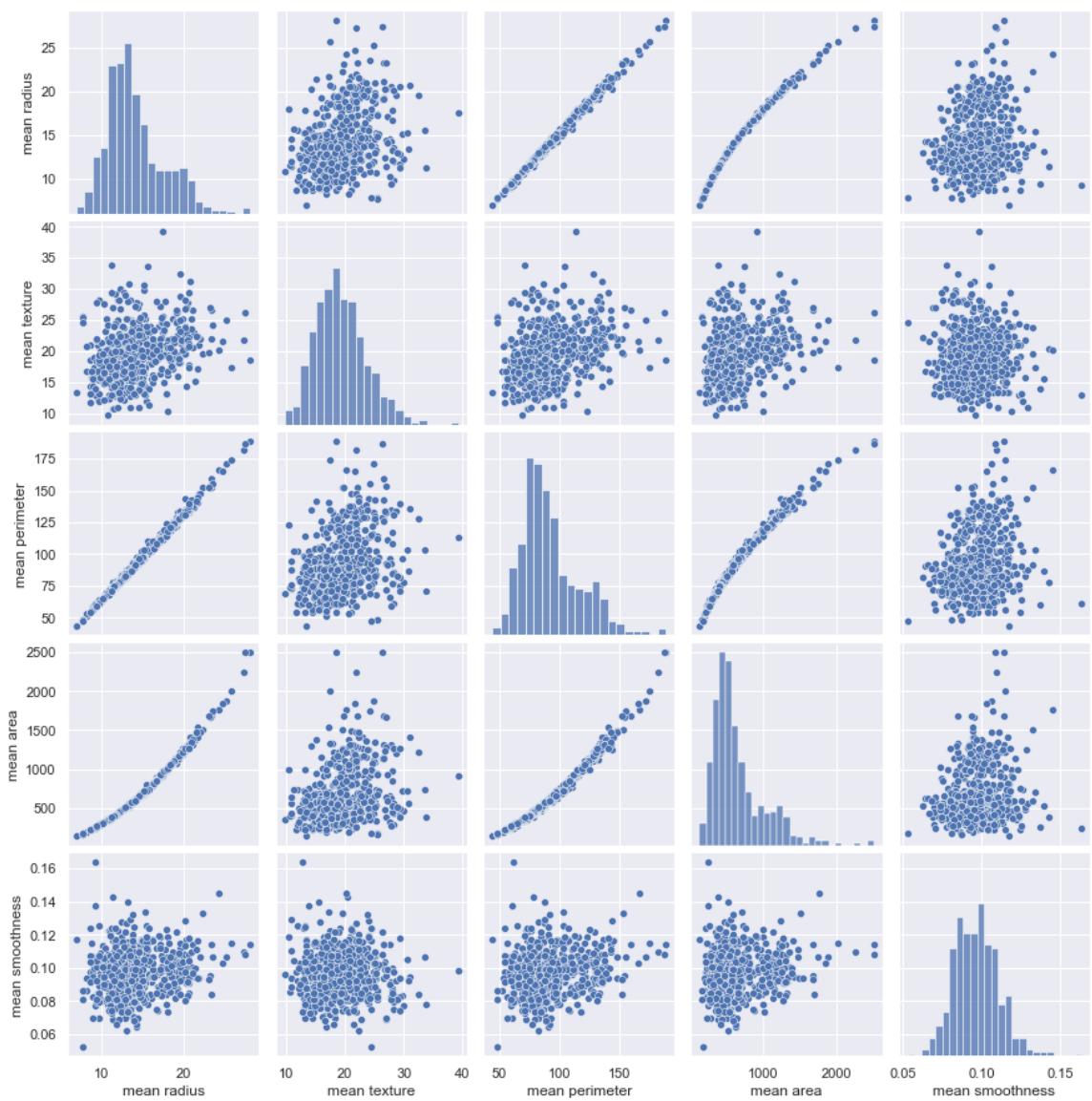
533	20.470	20.67	134.70	1299.0	0.09156	0.13130	0.152300	0.101500
534	10.960	17.62	70.79	365.6	0.09687	0.09752	0.052630	0.027880
535	20.550	20.86	137.80	1308.0	0.10460	0.17390	0.208500	0.132200
536	14.270	22.55	93.77	629.8	0.10380	0.11540	0.146300	0.061390
537	11.690	24.44	76.37	406.4	0.12360	0.15520	0.045150	0.045310
538	7.729	25.49	47.98	178.8	0.08098	0.04878	0.000000	0.000000
539	7.691	25.44	48.34	170.4	0.08668	0.11990	0.092520	0.013640
540	11.540	14.44	74.65	402.9	0.09984	0.11200	0.067370	0.025940
541	14.470	24.99	95.81	656.4	0.08837	0.12300	0.100900	0.038900
542	14.740	25.42	94.70	668.6	0.08275	0.07214	0.041050	0.030270
543	13.210	28.06	84.88	538.4	0.08671	0.06877	0.029870	0.032750
544	13.870	20.70	89.77	584.8	0.09578	0.10180	0.036880	0.023690
545	13.620	23.23	87.19	573.2	0.09246	0.06747	0.029740	0.024430
546	10.320	16.35	65.31	324.9	0.09434	0.04994	0.010120	0.005495
547	10.260	16.58	65.85	320.8	0.08877	0.08066	0.043580	0.024380
548	9.683	19.34	61.05	285.7	0.08491	0.05030	0.023370	0.009615
549	10.820	24.21	68.89	361.6	0.08192	0.06602	0.015480	0.008160
550	10.860	21.48	68.51	360.5	0.07431	0.04227	0.000000	0.000000
551	11.130	22.44	71.49	378.4	0.09566	0.08194	0.048240	0.022570
552	12.770	29.43	81.35	507.9	0.08276	0.04234	0.019970	0.014990
553	9.333	21.94	59.01	264.0	0.09240	0.05605	0.039960	0.012820
554	12.880	28.92	82.50	514.3	0.08123	0.05824	0.061950	0.023430
555	10.290	27.61	65.67	321.4	0.09030	0.07658	0.059990	0.027380
556	10.160	19.59	64.73	311.7	0.10030	0.07504	0.005025	0.011160
557	9.423	27.88	59.26	271.3	0.08123	0.04971	0.000000	0.000000
558	14.590	22.68	96.39	657.1	0.08473	0.13300	0.102900	0.037360
559	11.510	23.93	74.52	403.5	0.09261	0.10210	0.111200	0.041050
560	14.050	27.15	91.38	600.4	0.09929	0.11260	0.044620	0.043040
561	11.200	29.37	70.67	386.0	0.07449	0.03558	0.000000	0.000000
562	15.220	30.62	103.40	716.9	0.10480	0.20870	0.255000	0.094290
563	20.920	25.09	143.00	1347.0	0.10990	0.22360	0.317400	0.147400
564	21.560	22.39	142.00	1479.0	0.11100	0.11590	0.243900	0.138900
565	20.130	28.25	131.20	1261.0	0.09780	0.10340	0.144000	0.097910
566	16.600	28.08	108.30	858.1	0.08455	0.10230	0.092510	0.053020
567	20.600	29.33	140.10	1265.0	0.11780	0.27700	0.351400	0.152000
568	7.760	24.54	47.92	181.0	0.05263	0.04362	0.000000	0.000000

569 rows × 31 columns

In [174]:

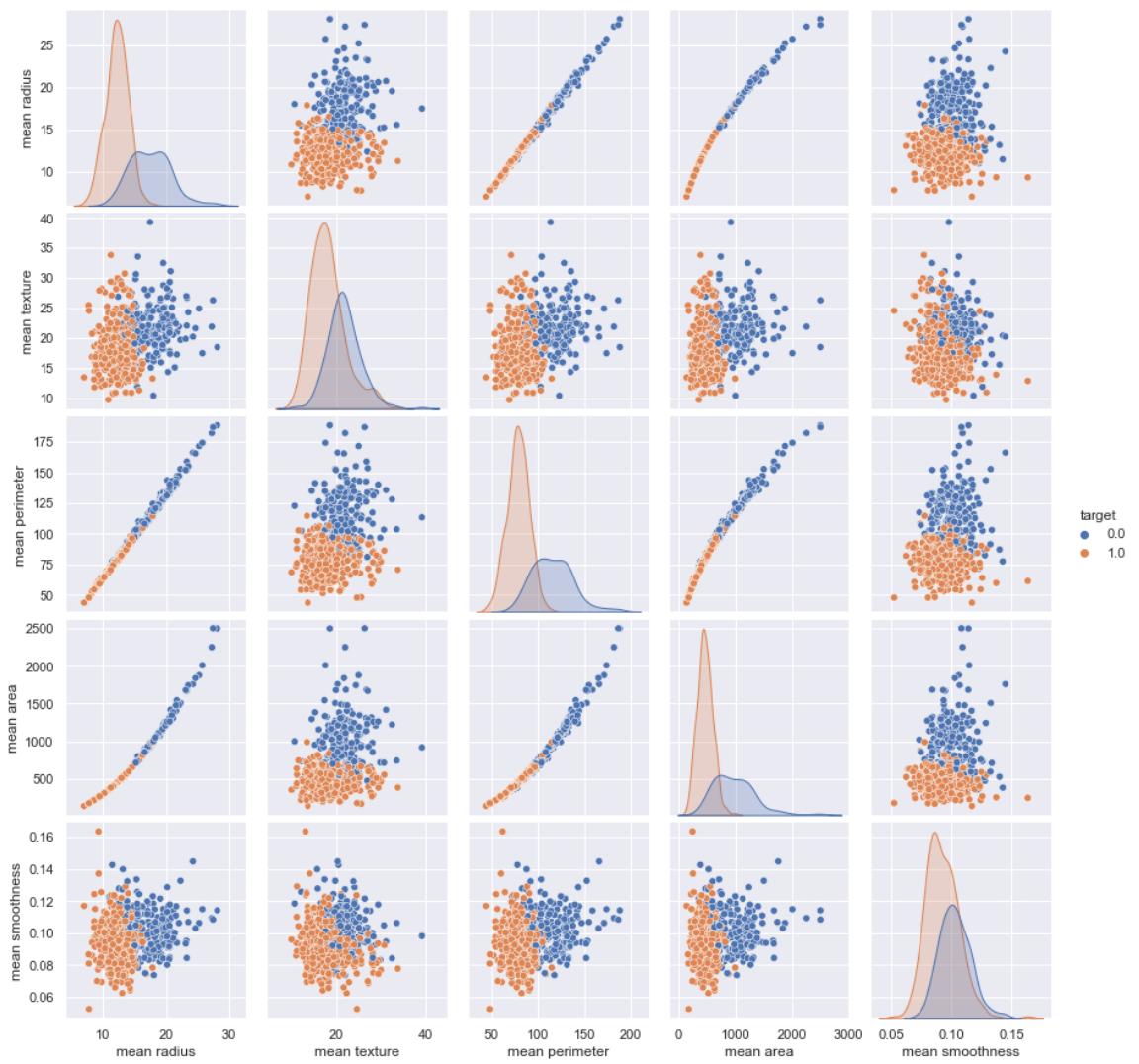
```
sns.pairplot(cancer_df, vars =['mean radius', 'mean texture', 'mean peri'])
```

```
sns.set(font_scale=1)
```

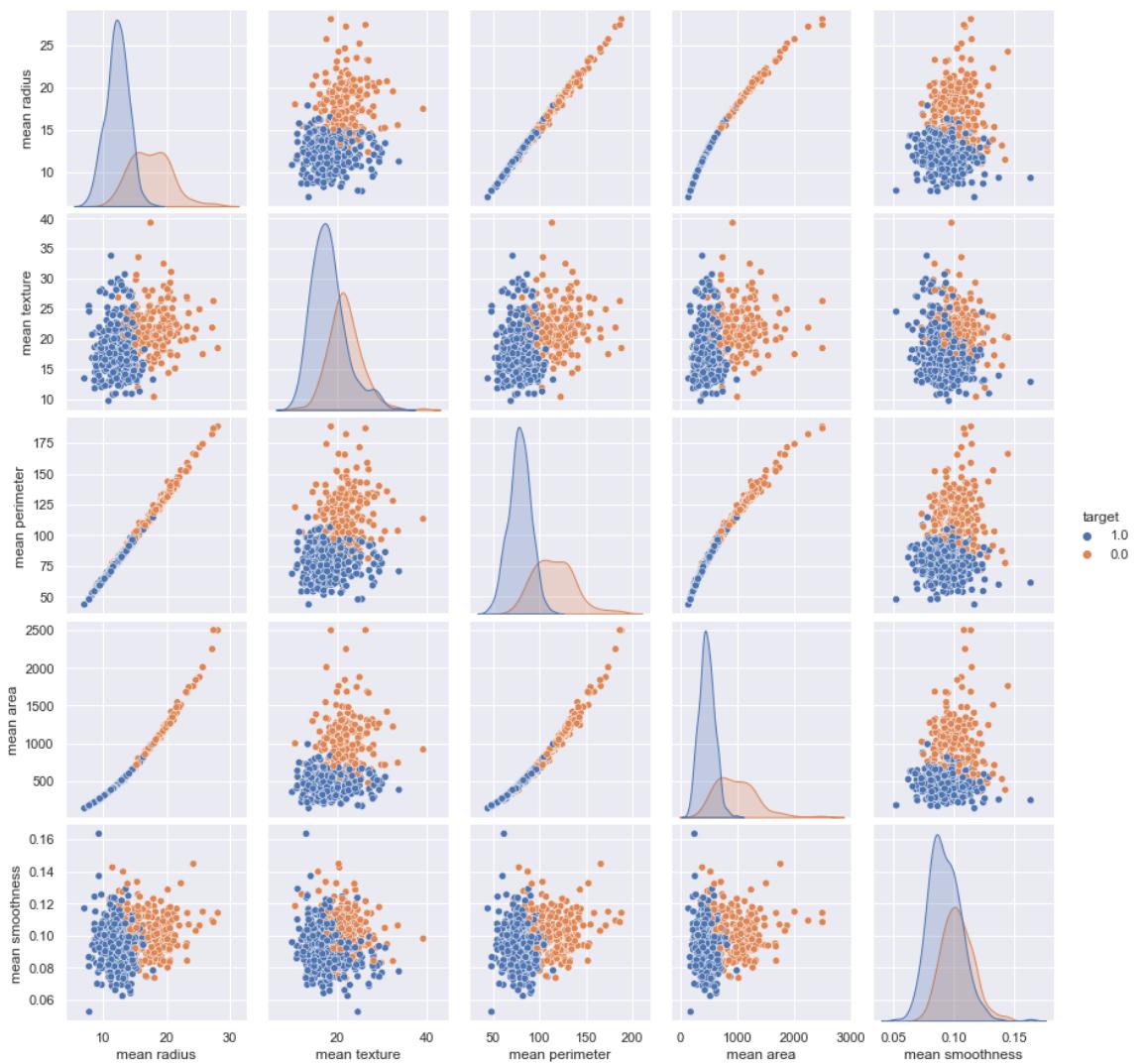


In [170]:

```
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean perim.  
sns.set(font_scale=1)
```

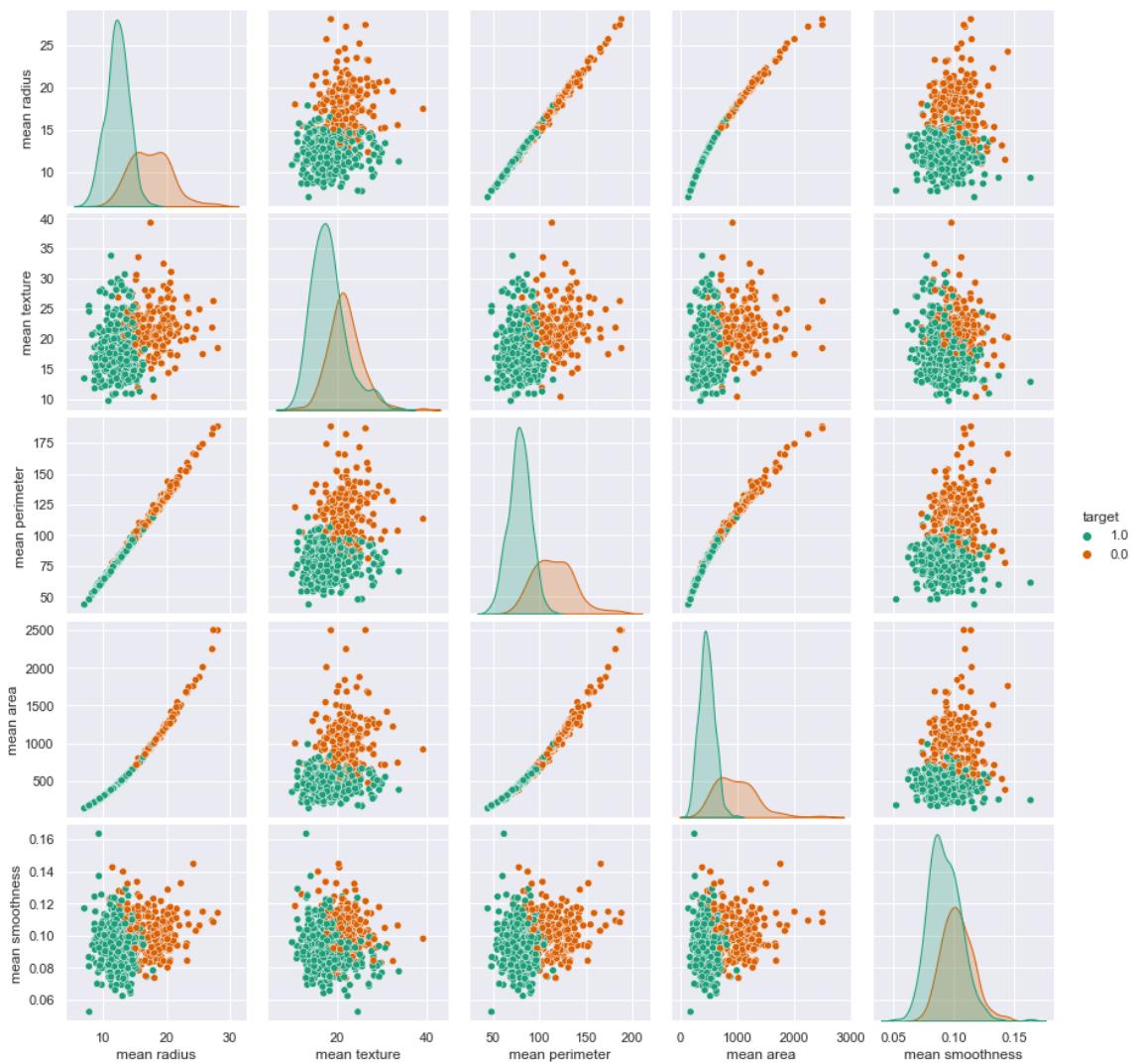


```
In [171]:  
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean per  
sns.set(font_scale=1)
```



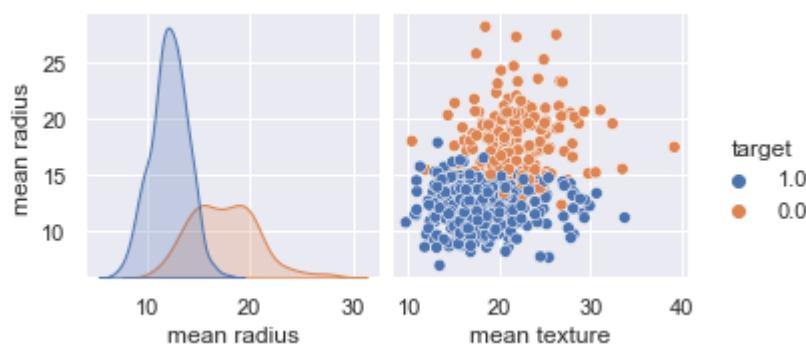
In [172]:

```
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean perimeter', 'mean area', 'mean smoothness'])
sns.set(font_scale=1)
```



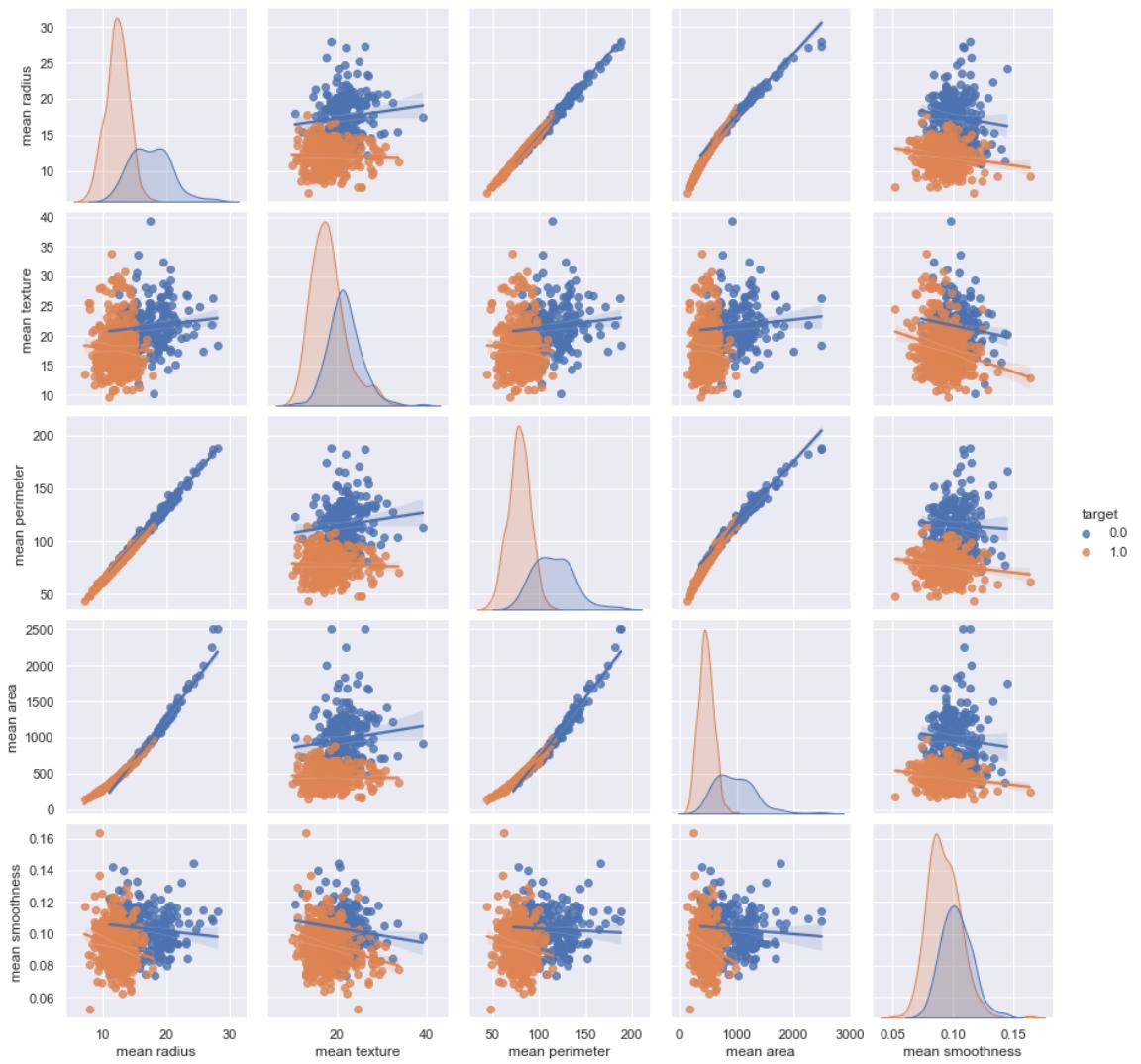
In [173]:

```
sns.pairplot(cancer_df, hue='target', hue_order = [1.0,0.0],
             x_vars = ['mean radius','mean texture'], y_vars = ['mean radius',
             'mean texture','mean perimeter','mean area','mean smoothness'],
             sns.set(font_scale=1)
```



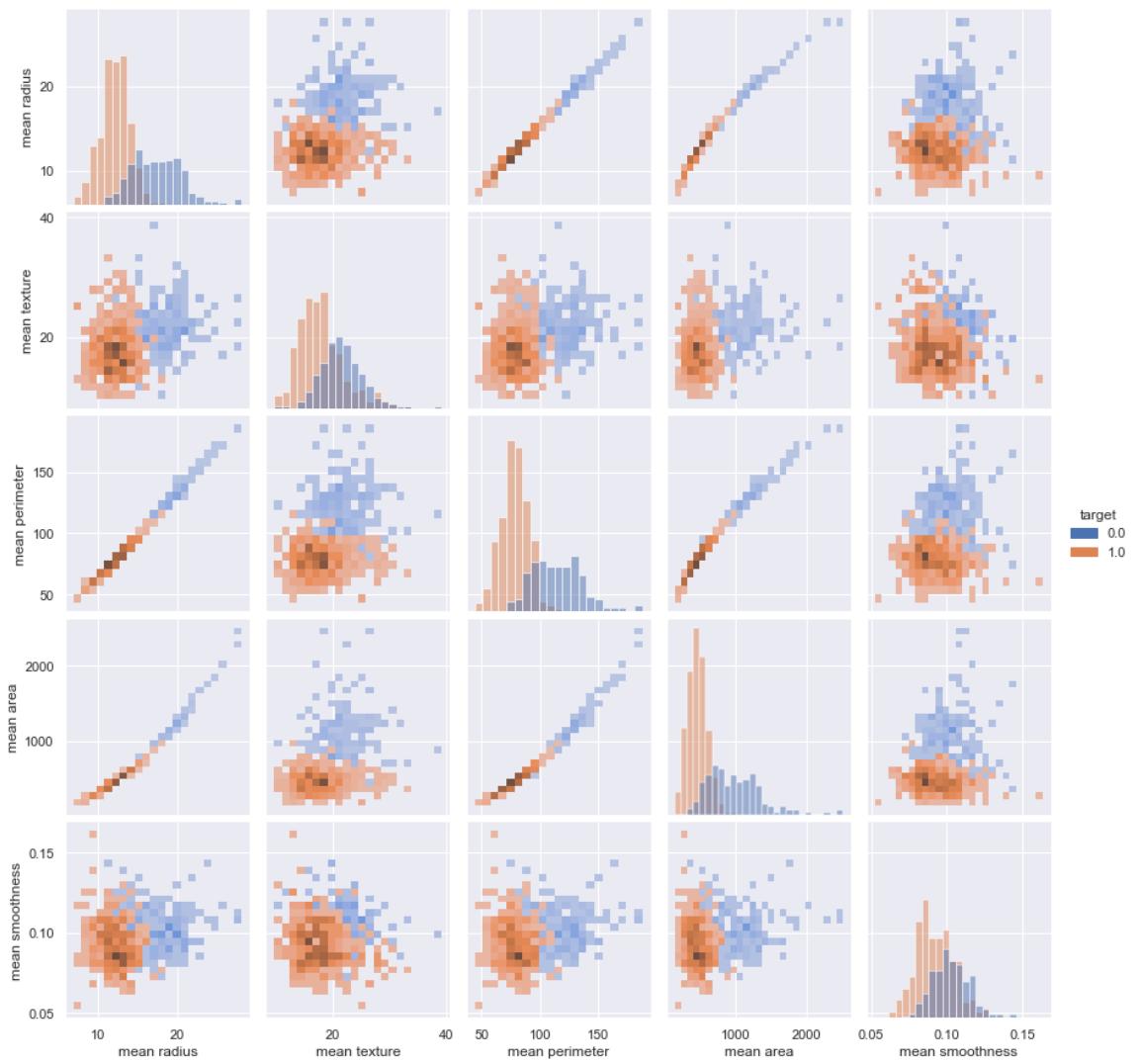
In [176]:

```
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean perimeter',
             'mean area'], sns.set(font_scale=1)
```



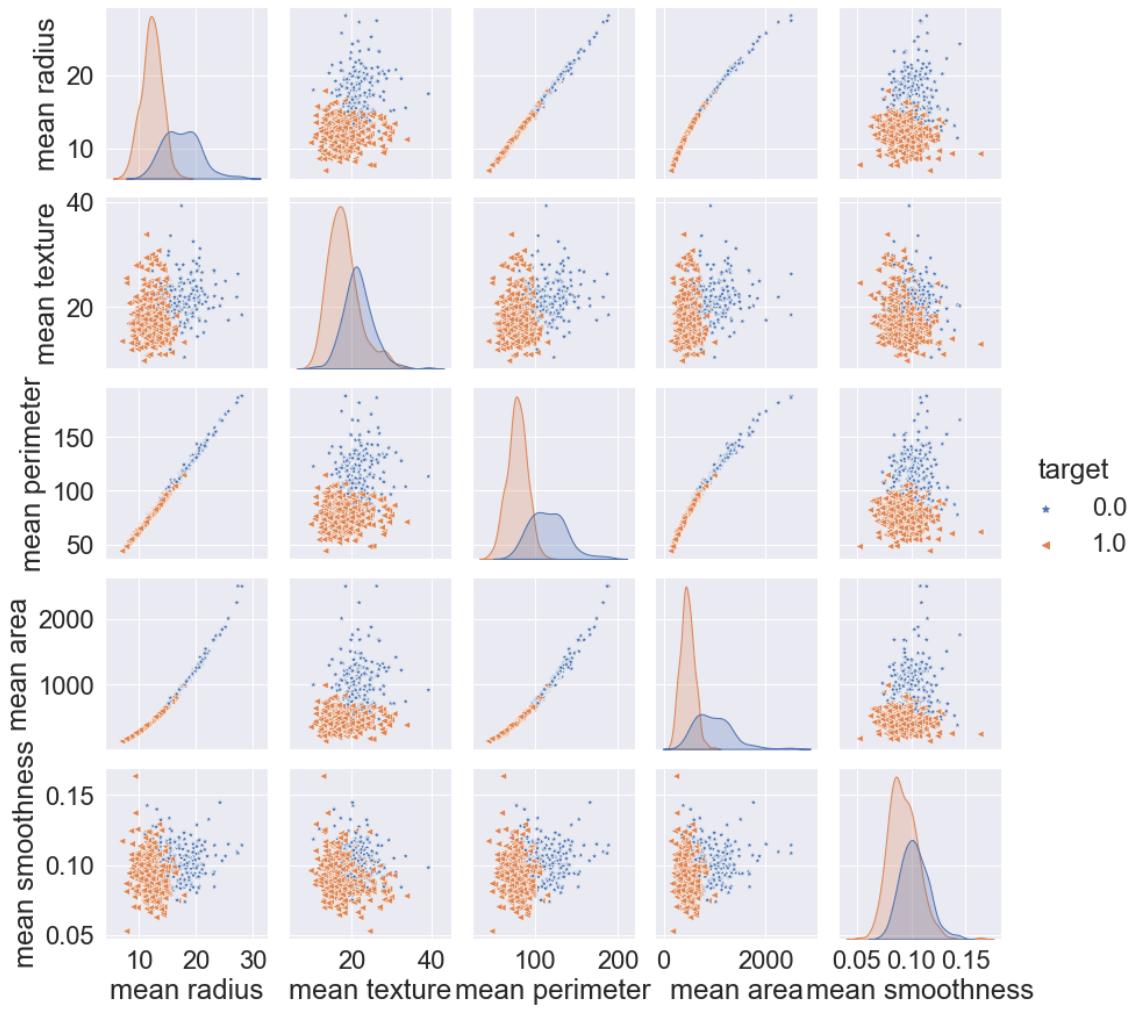
In [178]:

```
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean perimeter', 'mean area', 'mean smoothness'])
sns.set(font_scale=2)
```



In [179]:

```
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean perimeter', 'mean area', 'mean smoothness'])
sns.set(font_scale=2)
```



In [183]:

```
sns.pairplot(cancer_df, vars = ['mean radius', 'mean texture', 'mean perimeter', 'mean area', 'mean smoothness'],  
sns.set(font_scale=5)
```

