(http://www.pieriandata.com)

Scatter Plots

Scatter plots can show how different features are related to one another, the main theme between all relational plot types is they display how features are interconnected to each other. There are many different types of plots that can be used to show this, so let's explore the scatterplot() as well as general seaborn parameters applicable to other plot types.

Data

We'll use some generated data from: http://roycekimmons.com/tools/generated_data (http://roycekimmons.com/tools/generated_data)

In [1]:
```
import pandas as pd
import seaborn as sns
```

In [3]:
```
df = pd.read_csv("dm_office_sales.csv")
```

In [4]:
```
df.head()
```

Out[4]:

	division	level of education	training level	work experience	salary	sales
0	printers	some college	2	6	91684	372302
1	printers	associate's degree	2	10	119679	495660
2	peripherals	high school	0	9	82045	320453
3	office supplies	associate's degree	2	5	92949	377148
4	office supplies	high school	1	5	71280	312802

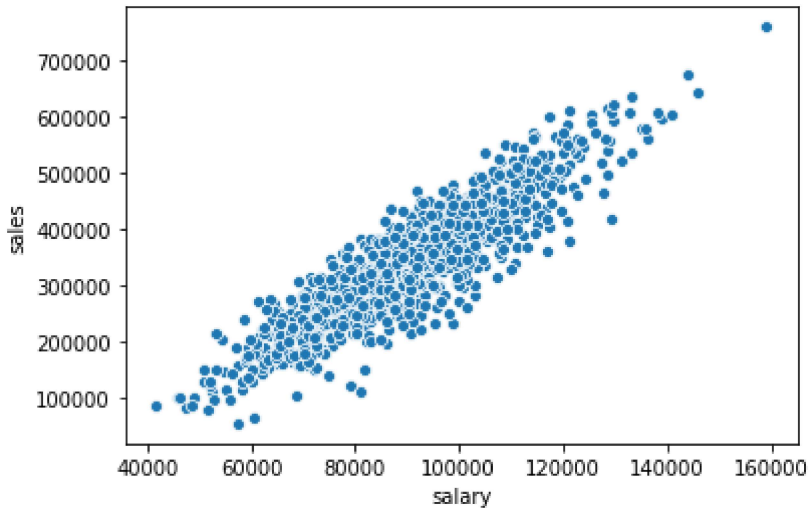
In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1000 entries, 0 to 999
Data columns (total 6 columns):
 #   Column              Non-Null Count  Dtype 
---  ------              --------------  ----- 
 0   division            1000 non-null   object
 1   level of education  1000 non-null   object
 2   training level      1000 non-null   int64 
 3   work experience     1000 non-null   int64 
 4   salary              1000 non-null   int64 
 5   sales               1000 non-null   int64 
dtypes: int64(4), object(2)
memory usage: 47.0+ KB
```

Scatterplot

In [6]:
```
sns.scatterplot(x='salary',y='sales',data=df)
```

Out[6]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2089e370088>
```



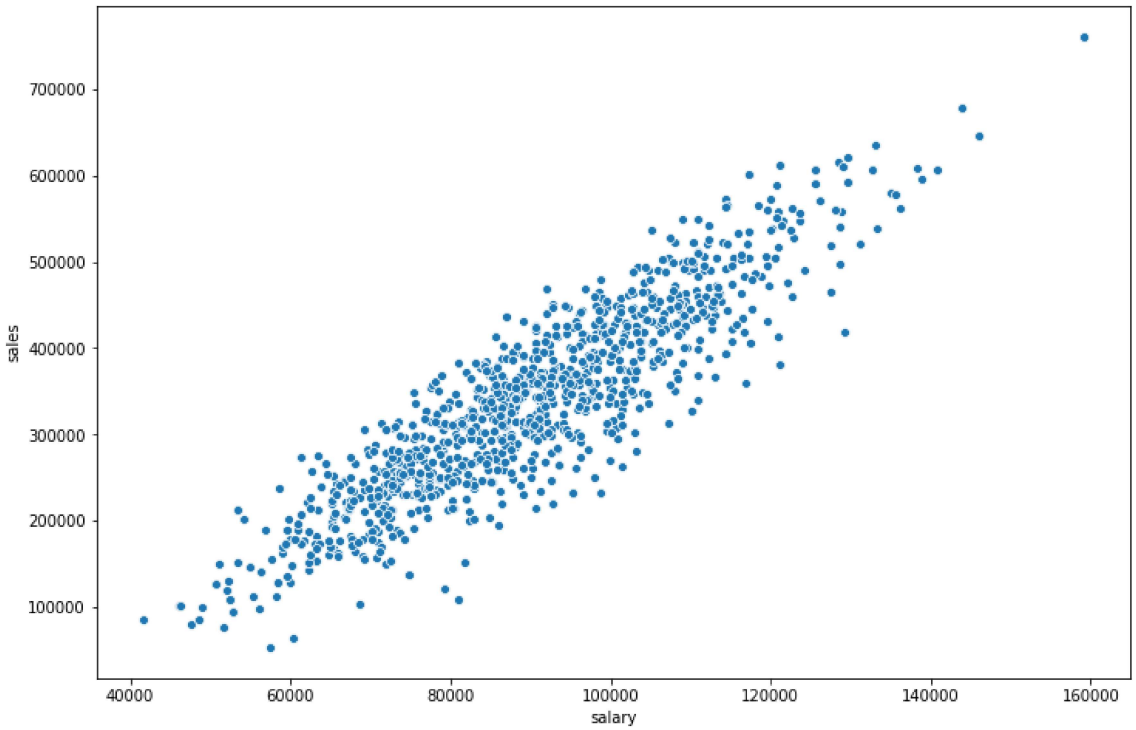
Connecting to Figure in Matplotlib

Note how matplotlib is still connected to seaborn underneath (even without importing matplotlib.pyplot), since seaborn itself is directly making a Figure call with matplotlib. We can import matplotlib.pyplot and make calls to directly effect the seaborn figure.

In [7]:
```
import matplotlib.pyplot as plt
```

In [8]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df)
```

Out[8]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2089fb16a08>
```



Seaborn Parameters

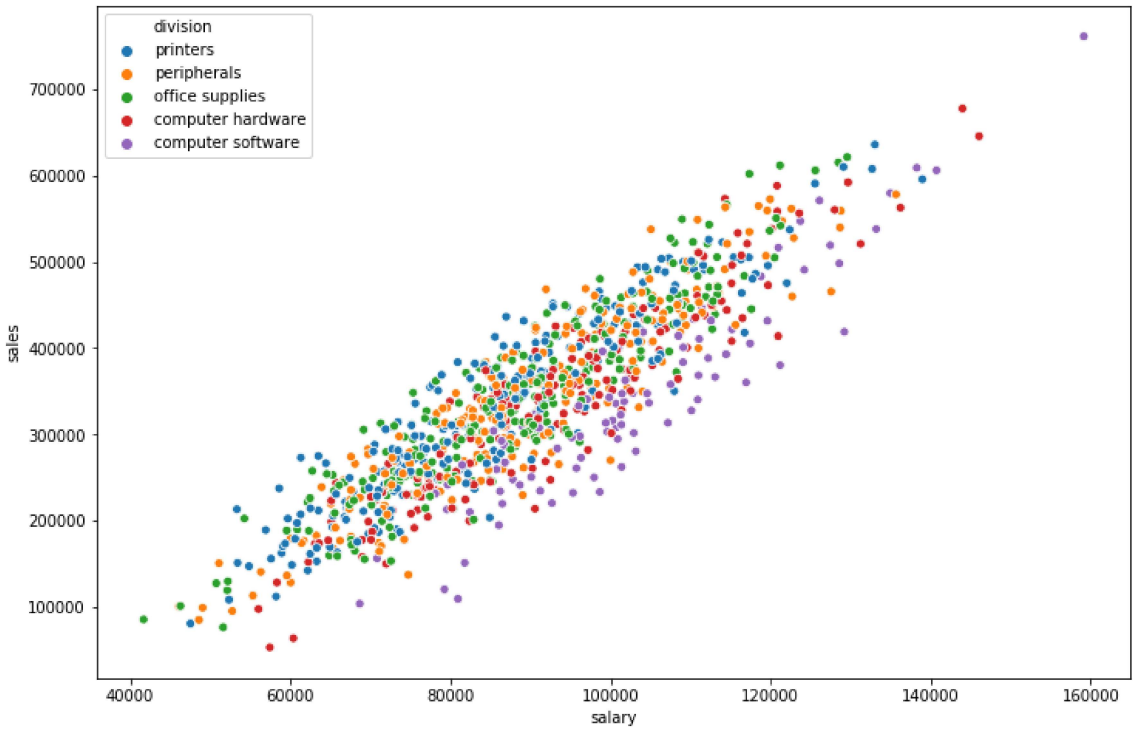
The hue and palette parameters are commonly available around many plot calls in seaborn.

hue

Color points based off a categorical feature in the DataFrame

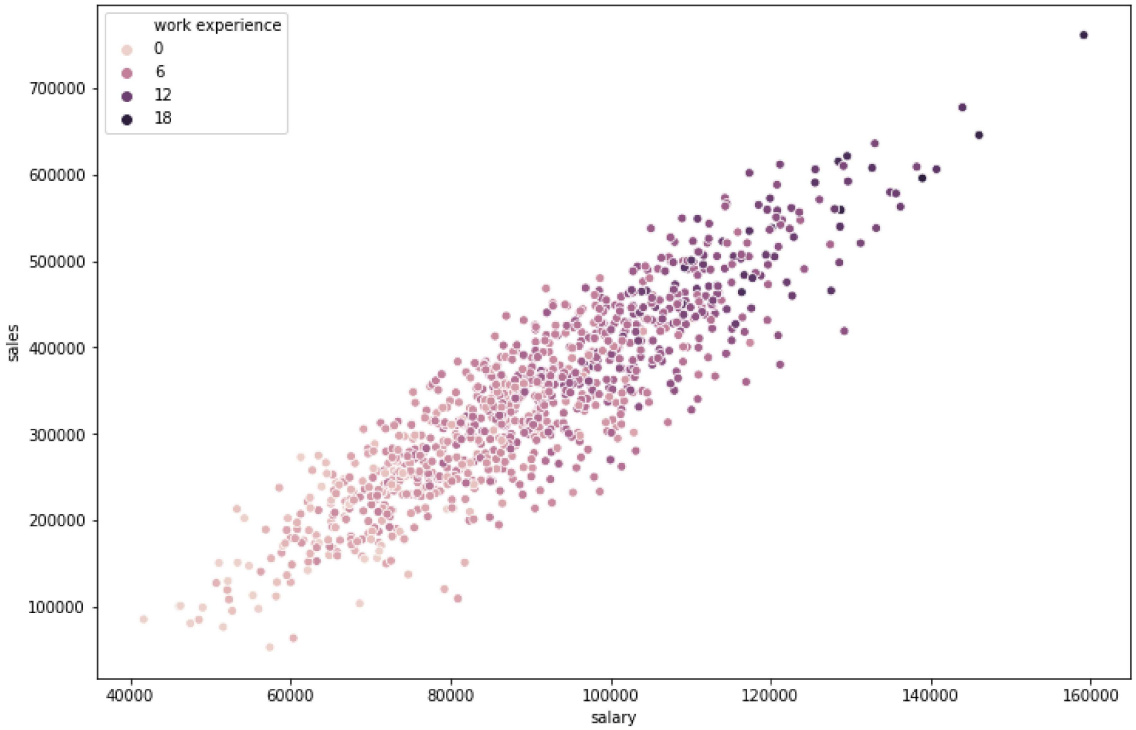
In [9]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,hue='division')
```

Out[9]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2089fb0fe88>
```



In [10]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,hue='work experience')
```

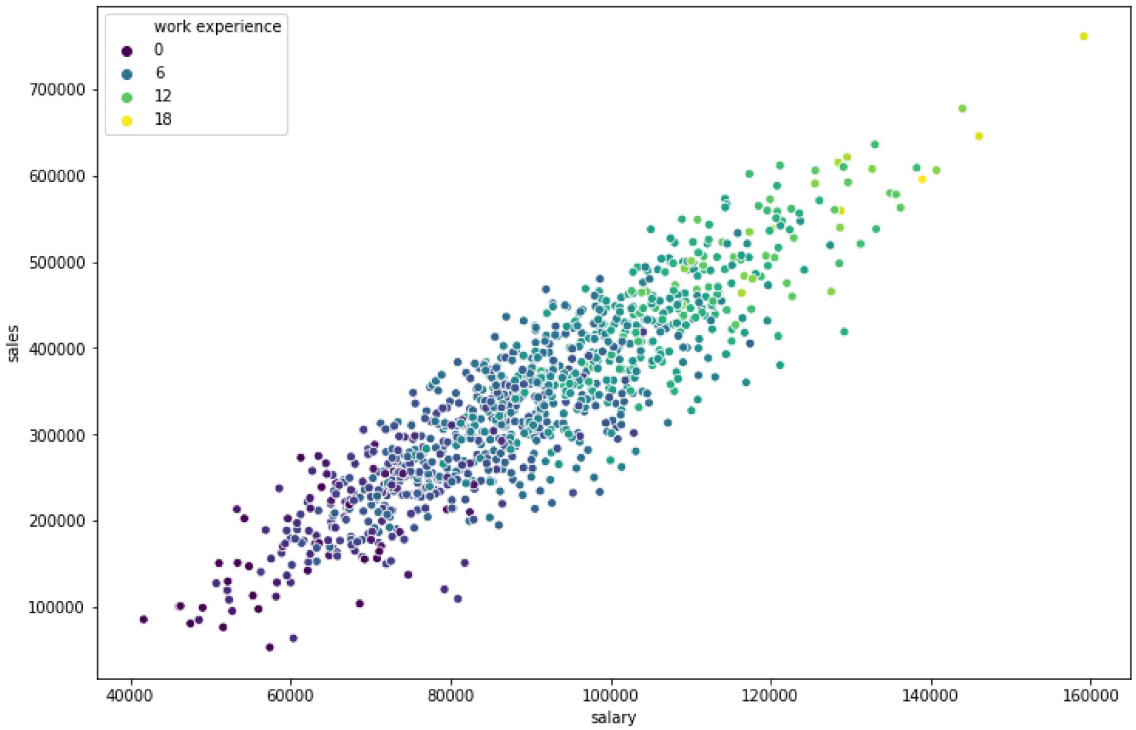
Out[10]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2089fc3d848>
```



Choosing a palette from Matplotlib's cmap:
https://matplotlib.org/tutorials/colors/colormaps.html
(https://matplotlib.org/tutorials/colors/colormaps.html)

In [11]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,hue='work experience',palette=
```

Out[11]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2089fcbbdc8>
```



Scatterplot Parameters

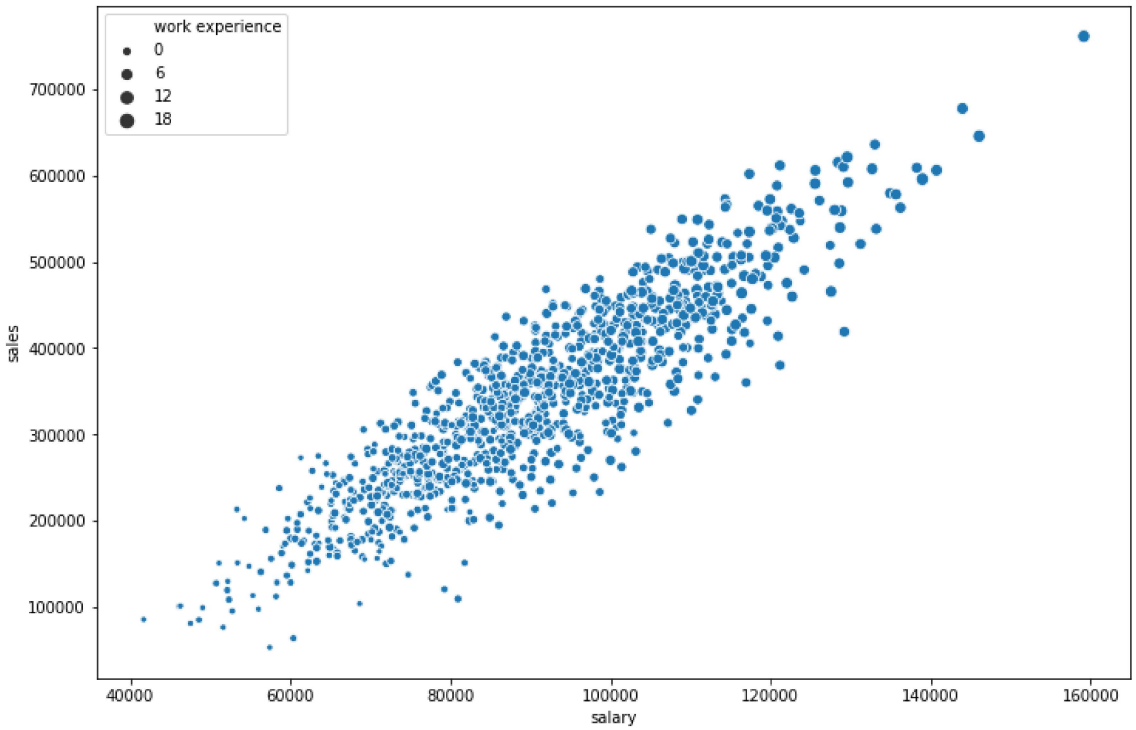
These parameters are more specific to the scatterplot() call

size

Allows you to size based on another column

In [12]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,size='work experience')
```

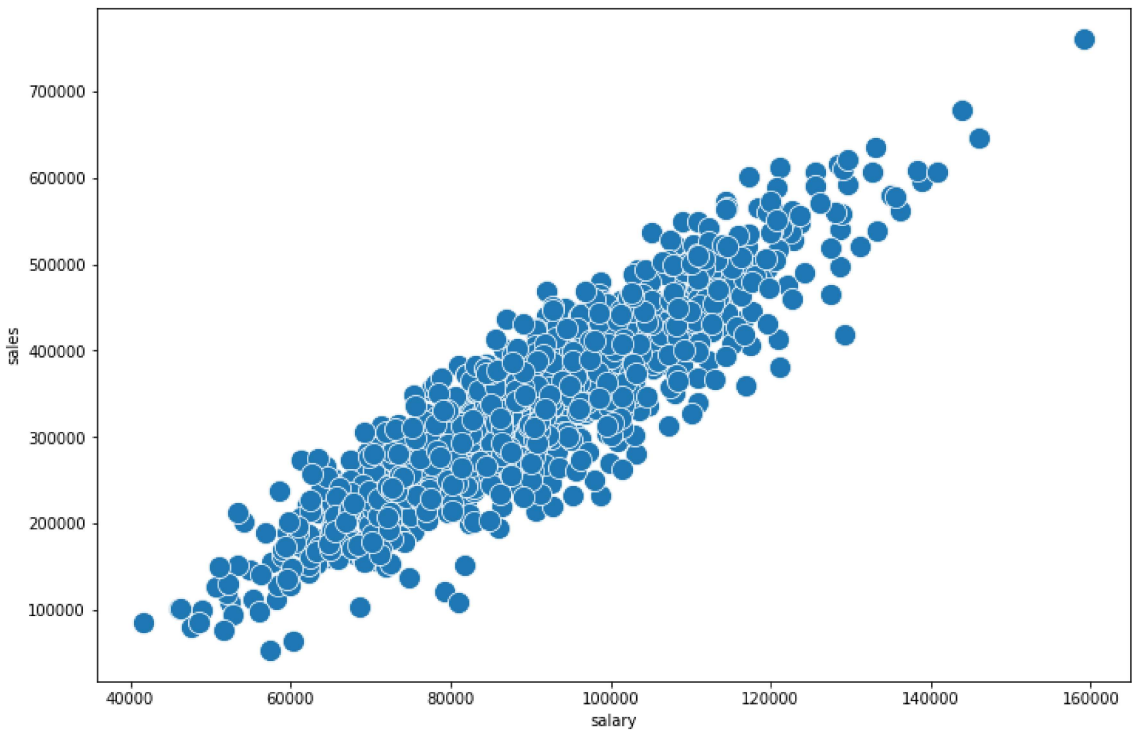
Out[12]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x2089fcb7188>
```



Use *s*= if you want to change the marker size to be some uniform integer value

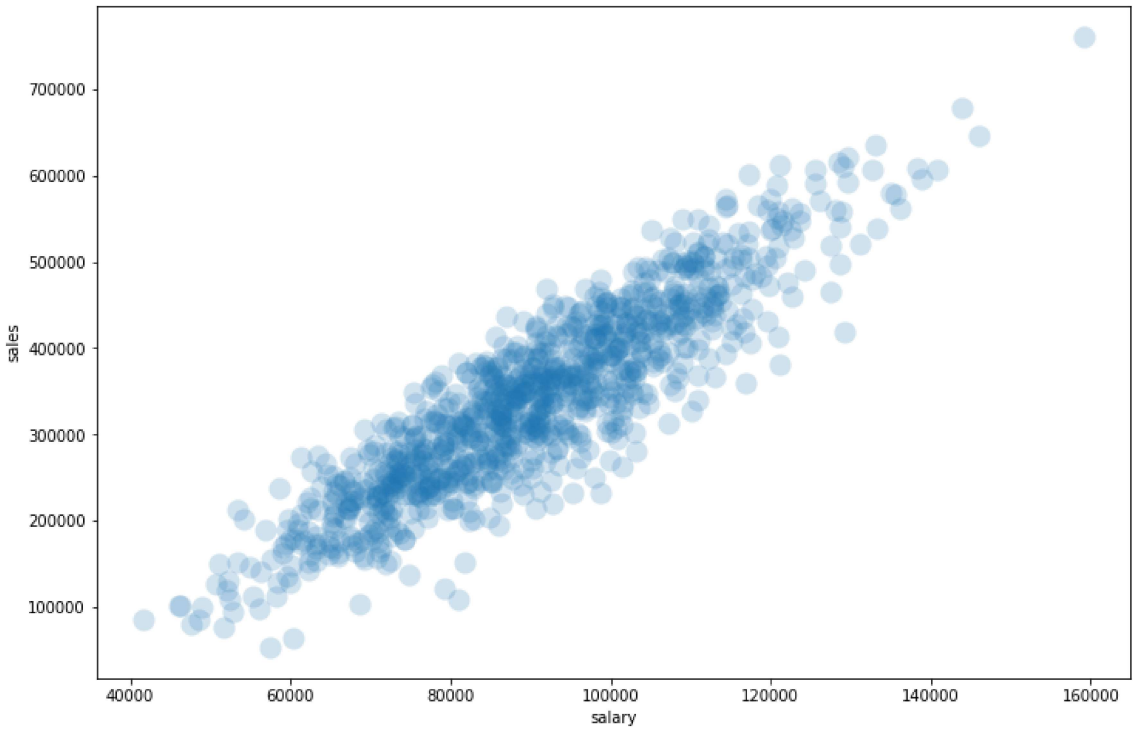
In [13]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,s=200)
```

Out[13]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x208a00c1708>
```



In [17]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,s=200,linewidth=0,alpha=0.2)
```

Out[17]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x208a077b908>
```

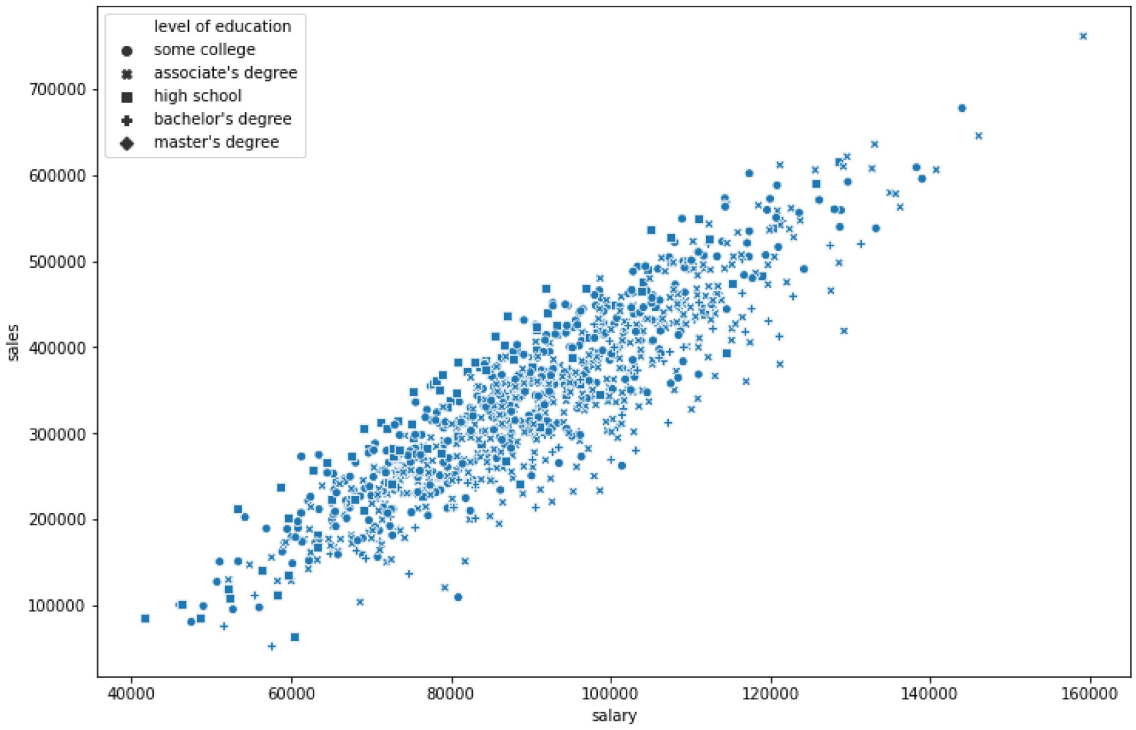


style

Automatically choose styles based on another categorical feature in the dataset. Optionally use the **markers=** parameter to pass a list of marker choices based off matplotlib, for example: ['*','+','o']

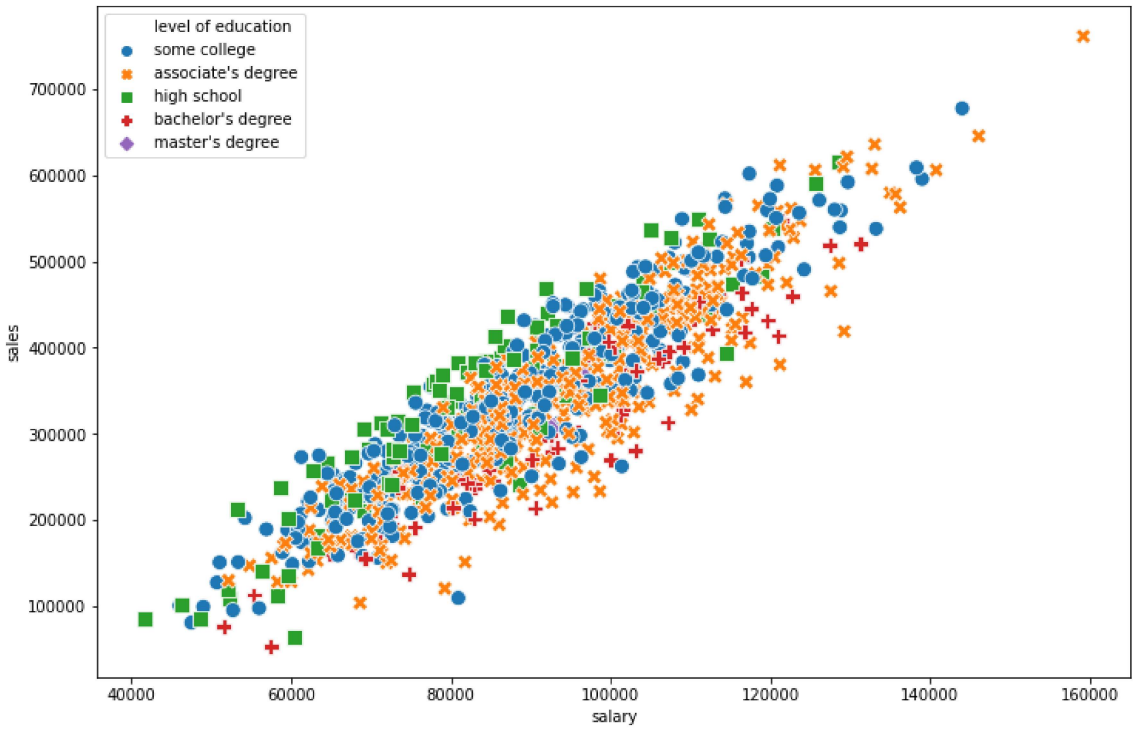
In [13]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,style='level of education')
```

Out[13]: <AxesSubplot:xlabel='salary', ylabel='sales'>



In [14]:
```
plt.figure(figsize=(12,8))
# Sometimes its nice to do BOTH hue and style off the same column
sns.scatterplot(x='salary',y='sales',data=df,style='level of education',hue
```

Out[14]: <AxesSubplot:xlabel='salary', ylabel='sales'>



Exporting a Seaborn Figure

In [16]:
```
plt.figure(figsize=(12,8))
sns.scatterplot(x='salary',y='sales',data=df,style='level of education',hue

# Call savefig in the same cell
plt.savefig('example_scatter.jpg')
```