In [ ]:

Seaborn

Statistical data visualization tool

In [8]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [9]:
```
iris = pd.read_csv(r"D:\Dataset\iris.data",header=None)
iris
```

Out[9]:

	0	1	2	3	4
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

In [10]:
```
iris.columns = ['sl','sw','pl','pw','class']
```

In [11]:
```
iris.head()
```

Out[11]:

	sl	sw	pl	pw	class
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

In [12]:
```
iris.isnull().sum()
```

Out[12]:
```
sl       0
sw       0
pl       0
pw       0
class    0
dtype: int64
```

In [13]:
```
iris.dtypes
```

Out[13]:
```
sl       float64
sw       float64
pl       float64
pw       float64
class     object
dtype: object
```

In [14]:
```
iris.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   sl      150 non-null    float64
 1   sw      150 non-null    float64
 2   pl      150 non-null    float64
 3   pw      150 non-null    float64
 4   class   150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

In [15]:
```
for i in iris.columns:
    print(i,':','\n',iris[i].unique())
```

```
sl :
 [5.1 4.9 4.7 4.6 5.  5.4 4.4 4.8 4.3 5.8 5.7 5.2 5.5 4.5 5.3 7.  6.4 6.9
 6.5 6.3 6.6 5.9 6.  6.1 5.6 6.7 6.2 6.8 7.1 7.6 7.3 7.2 7.7 7.4 7.9]
sw :
 [3.5 3.  3.2 3.1 3.6 3.9 3.4 2.9 3.7 4.  4.4 3.8 3.3 4.1 4.2 2.3 2.8 2.4
 2.7 2.  2.2 2.5 2.6]
pl :
 [1.4 1.3 1.5 1.7 1.6 1.1 1.2 1.  1.9 4.7 4.5 4.9 4.  4.6 3.3 3.9 3.5 4.2
 3.6 4.4 4.1 4.8 4.3 5.  3.8 3.7 5.1 3.  6.  5.9 5.6 5.8 6.6 6.3 6.1 5.3
 5.5 6.7 6.9 5.7 6.4 5.4 5.2]
pw :
 [0.2 0.4 0.3 0.1 0.5 0.6 1.4 1.5 1.3 1.6 1.  1.1 1.8 1.2 1.7 2.5 1.9 2.1
 2.2 2.  2.4 2.3]
class :
 ['Iris-setosa' 'Iris-versicolor' 'Iris-virginica']
```

In [16]:
```
iris.describe(include='all')
```

Out[16]:

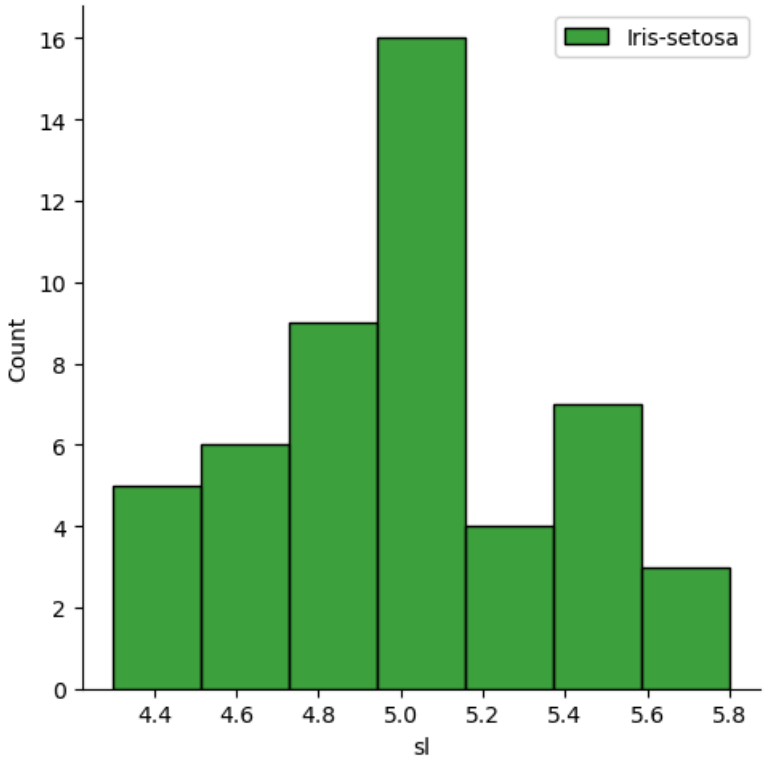
	sl	sw	pl	pw	class
count	150.000000	150.000000	150.000000	150.000000	150
unique	NaN	NaN	NaN	NaN	3
top	NaN	NaN	NaN	NaN	Iris-setosa
freq	NaN	NaN	NaN	NaN	50
mean	5.843333	3.054000	3.758667	1.198667	NaN
std	0.828066	0.433594	1.764420	0.763161	NaN
min	4.300000	2.000000	1.000000	0.100000	NaN
25%	5.100000	2.800000	1.600000	0.300000	NaN
50%	5.800000	3.000000	4.350000	1.300000	NaN
75%	6.400000	3.300000	5.100000	1.800000	NaN
max	7.900000	4.400000	6.900000	2.500000	NaN

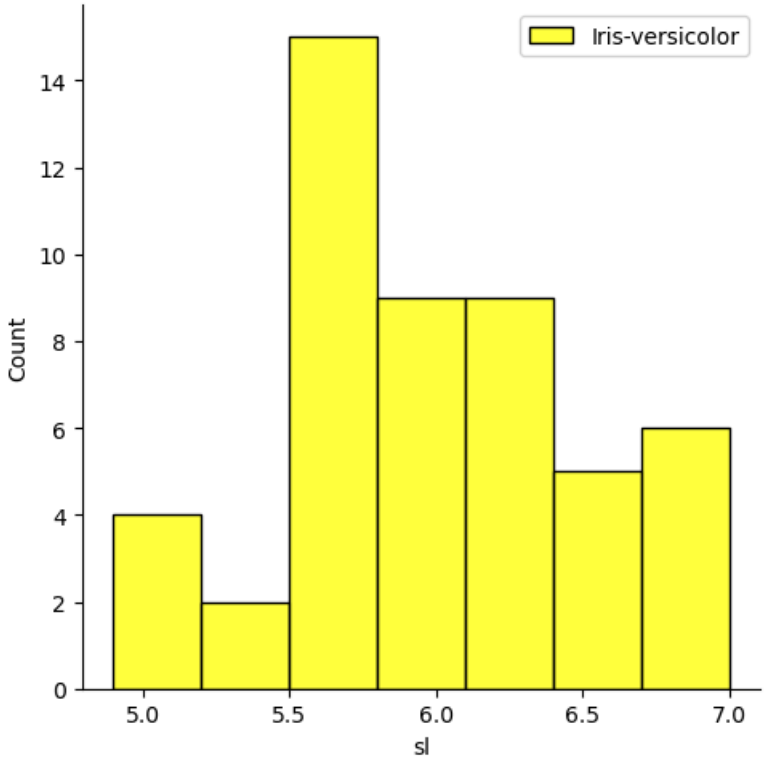
Data Analysis

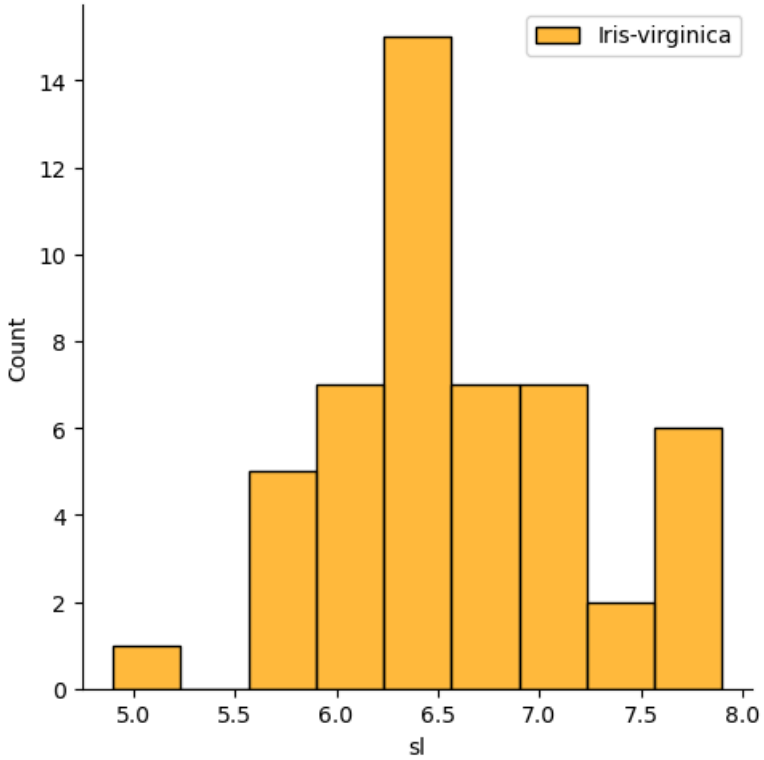
In [17]:
```
iris['class'].unique()
```

Out[17]:
```
array(['Iris-setosa', 'Iris-versicolor', 'Iris-virginica'], dtype=object)
```

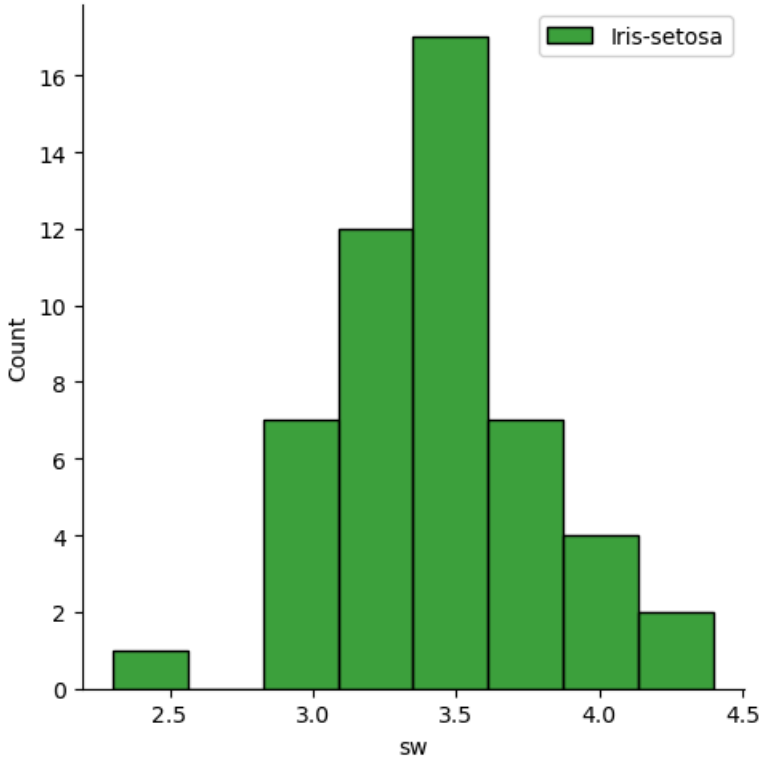
In [23]:
```
#displot
sns.displot(iris['sl'][iris['class']=='Iris-setosa'],label='Iris-setosa',color='green')
plt.legend()
sns.displot(iris['sl'][iris['class']=='Iris-versicolor'],label='Iris-versicolor',color='yellow')
plt.legend()
sns.displot(iris['sl'][iris['class']=='Iris-virginica'],label='Iris-virginica',color='orange')
plt.legend()
plt.show()
```

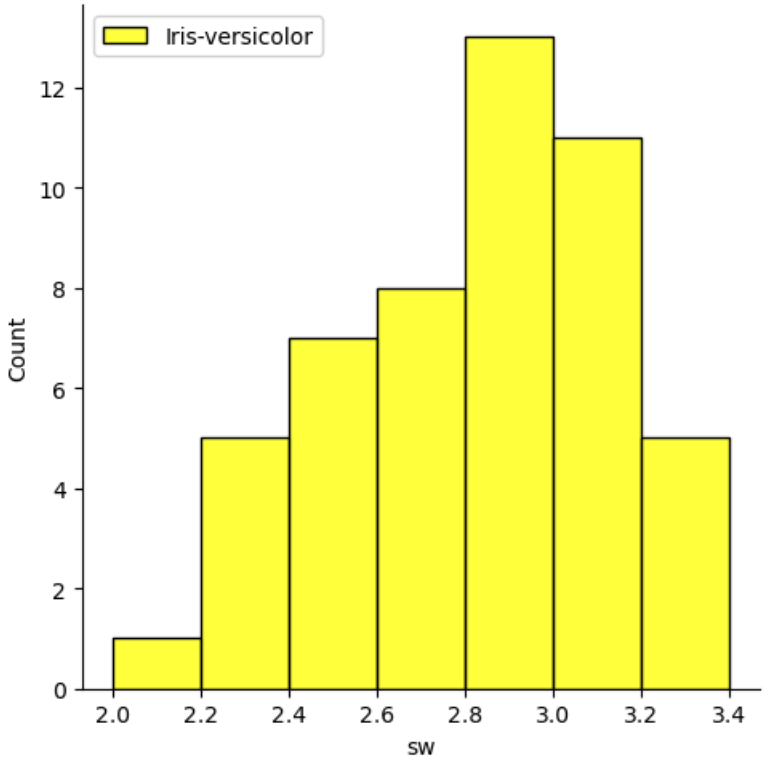


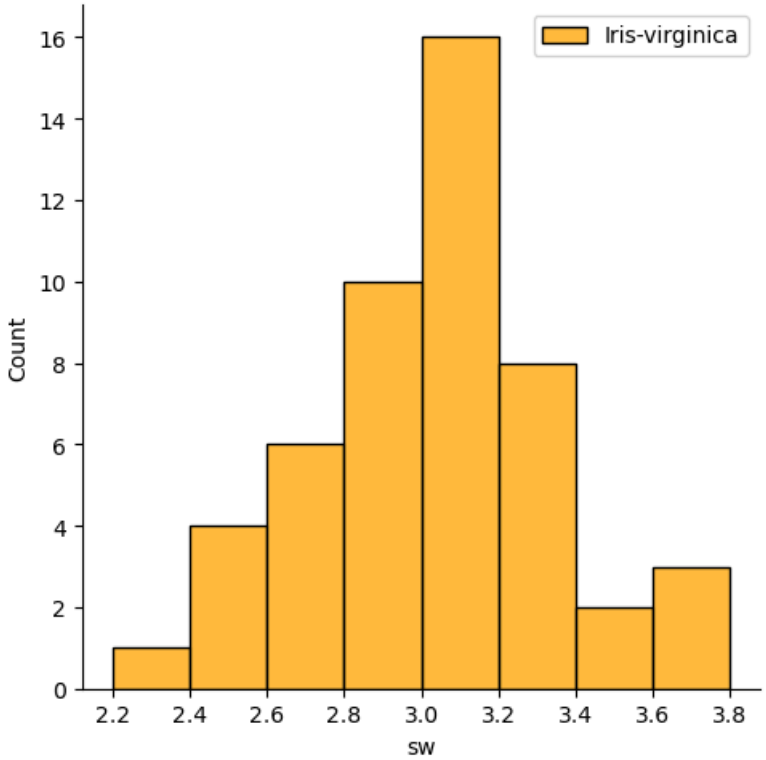

Iris-versicolor
Count
sl
0
2
4
6
8
10
12
14
5.0
5.5
6.0
6.5
7.0


Iris-virginica
Count
sl
0
2
4
6
8
10
12
14
5.0
5.5
6.0
6.5
7.0
7.5
8.0

In [24]:
```
sns.displot(iris['sw'][iris['class']=='Iris-setosa'],label='Iris-setosa',color='green')
plt.legend()
sns.displot(iris['sw'][iris['class']=='Iris-versicolor'],label='Iris-versicolor',color='yellow')
plt.legend()
sns.displot(iris['sw'][iris['class']=='Iris-virginica'],label='Iris-virginica',color='orange')
plt.legend()
plt.show()
```

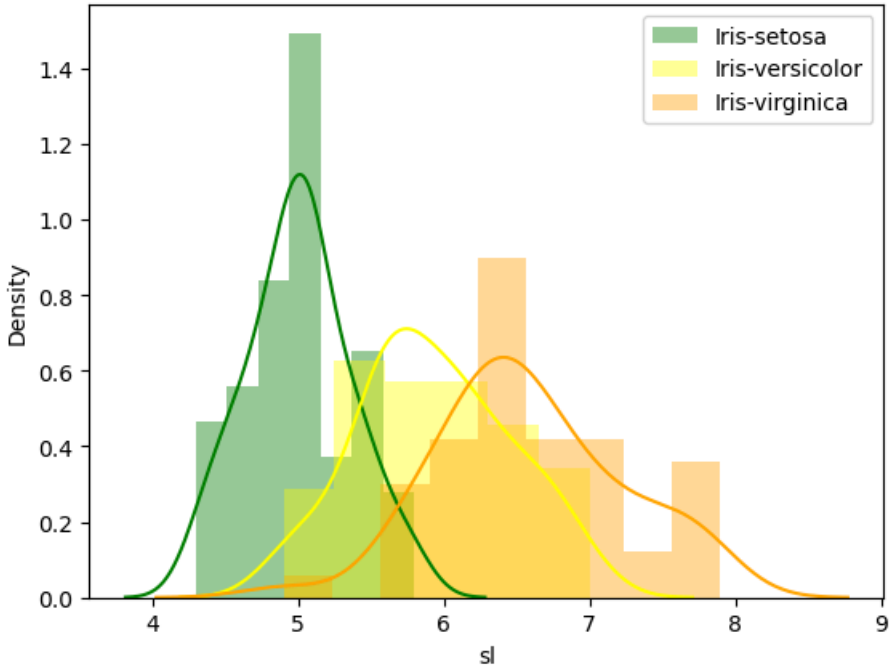



Iris-versicolor
Count
sw
0
2
4
6
8
10
12
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4

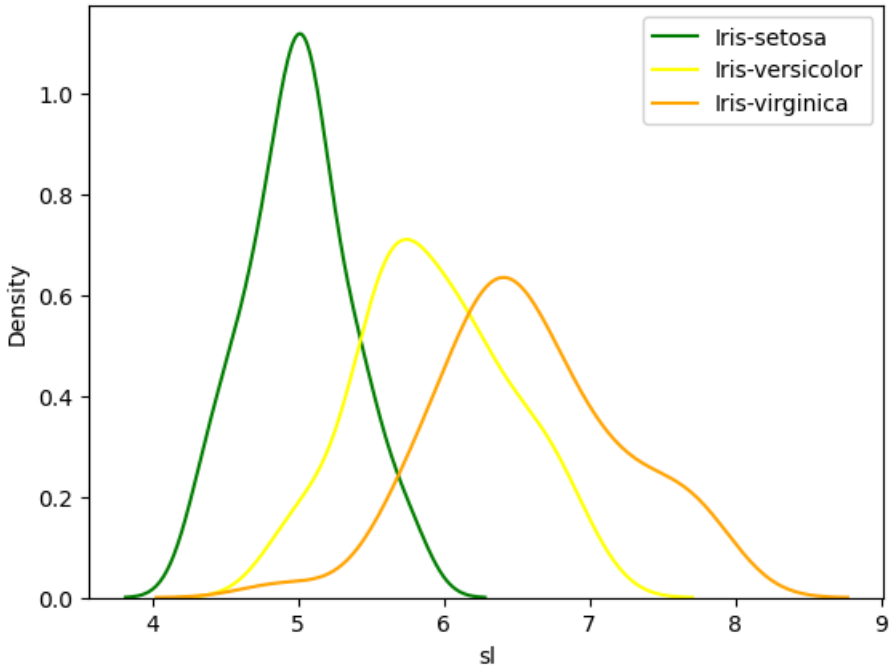

Iris-virginica
Count
sw
0
2
4
6
8
10
12
14
16
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8

In [25]:
```
sns.distplot(iris['sl'][iris['class']=='Iris-setosa'],label='Iris-setosa',color='green')
plt.legend()
sns.distplot(iris['sl'][iris['class']=='Iris-versicolor'],label='Iris-versicolor',color='yellow')
plt.legend()
sns.distplot(iris['sl'][iris['class']=='Iris-virginica'],label='Iris-virginica',color='orange')
plt.legend()
plt.show()
```

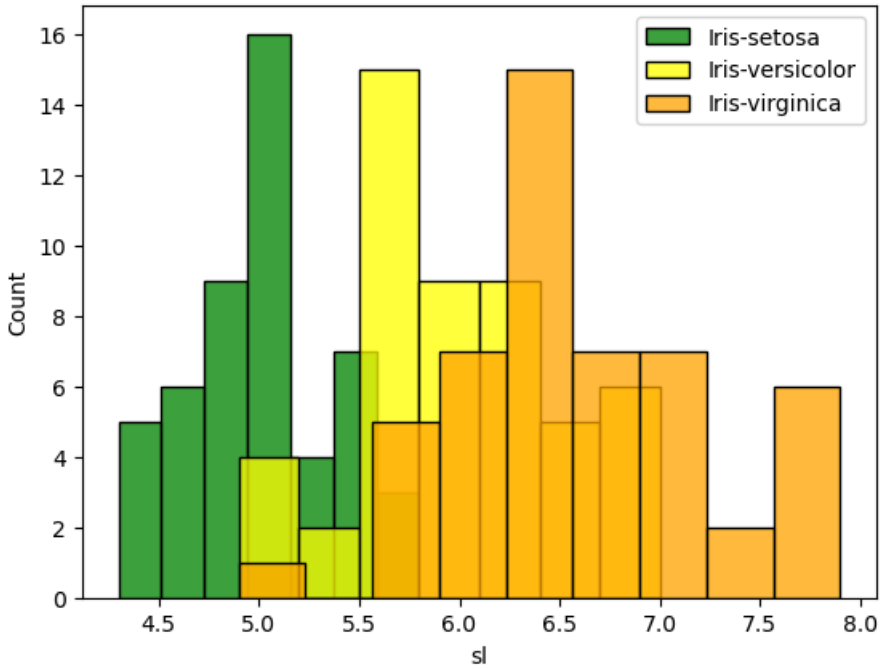
```
C:\Users\msi 1\AppData\Local\Temp\ipykernel_13256\3092807447.py:1: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751 (https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751)

  sns.distplot(iris['sl'][iris['class']=='Iris-setosa'],label='Iris-setosa',color='green')
C:\Users\msi 1\AppData\Local\Temp\ipykernel_13256\3092807447.py:3: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751 (https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751)

  sns.distplot(iris['sl'][iris['class']=='Iris-versicolor'],label='Iris-versicolor',color='yellow')
C:\Users\msi 1\AppData\Local\Temp\ipykernel_13256\3092807447.py:5: UserWarning:

`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with
similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see
https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751 (https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751)

  sns.distplot(iris['sl'][iris['class']=='Iris-virginica'],label='Iris-virginica',color='orange')
```


Iris-setosa
Iris-versicolor
Iris-virginica
Density
sl
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
4
5
6
7
8
9

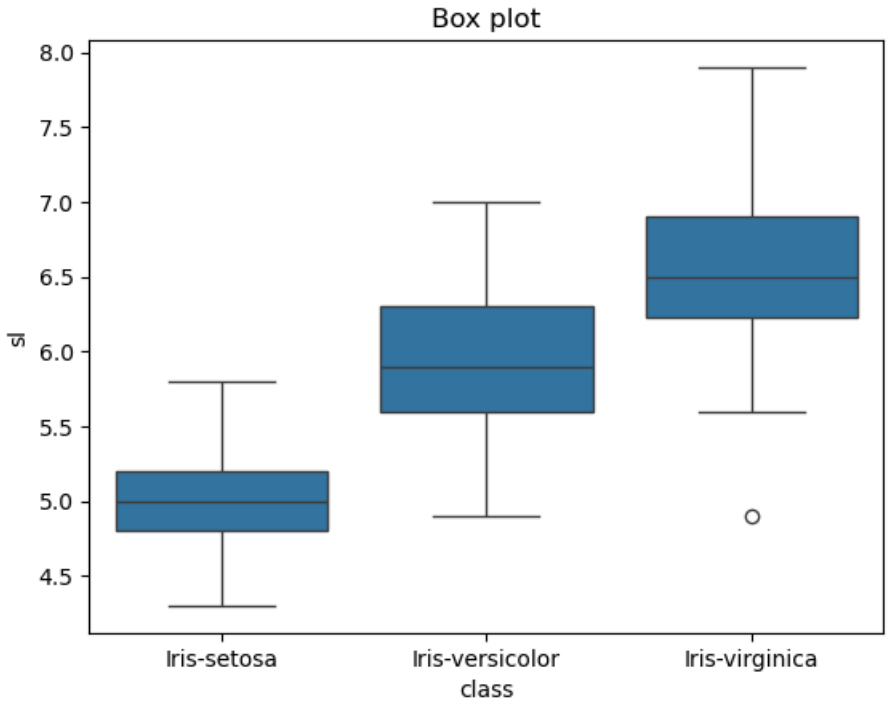
In [26]:
```
#kdeplot
sns.kdeplot(iris['sl'][iris['class']=='Iris-setosa'],label='Iris-setosa',color='green')
plt.legend()
sns.kdeplot(iris['sl'][iris['class']=='Iris-versicolor'],label='Iris-versicolor',color='yellow')
plt.legend()
sns.kdeplot(iris['sl'][iris['class']=='Iris-virginica'],label='Iris-virginica',color='orange')
plt.legend()
plt.show()
```



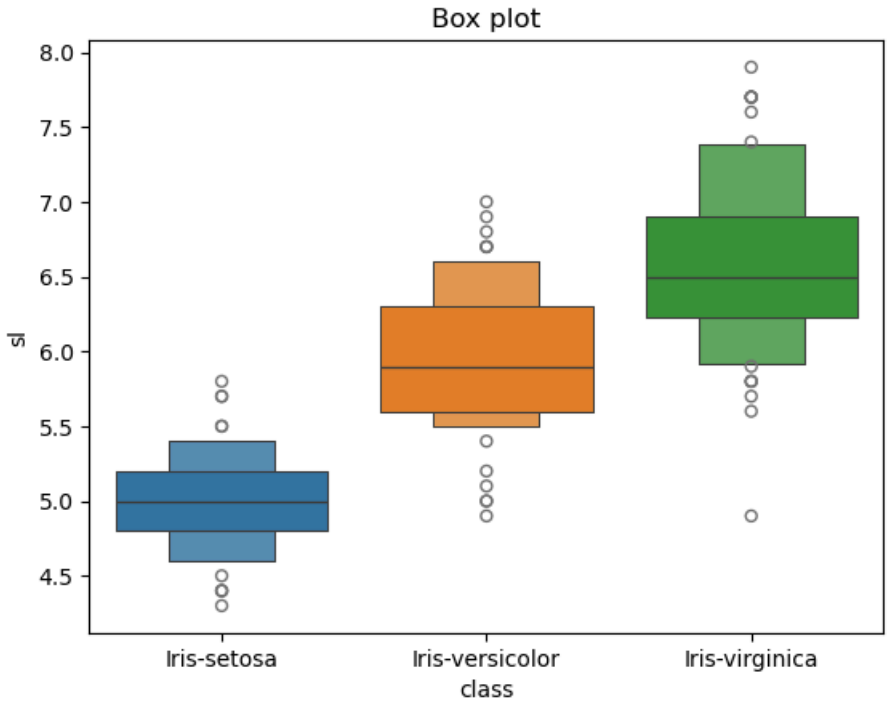
In [27]:
```
#histplot
sns.histplot(iris['sl'][iris['class']=='Iris-setosa'],label='Iris-setosa',color='green')
plt.legend()
sns.histplot(iris['sl'][iris['class']=='Iris-versicolor'],label='Iris-versicolor',color='yellow')
plt.legend()
sns.histplot(iris['sl'][iris['class']=='Iris-virginica'],label='Iris-virginica',color='orange')
plt.legend()
plt.show()
```



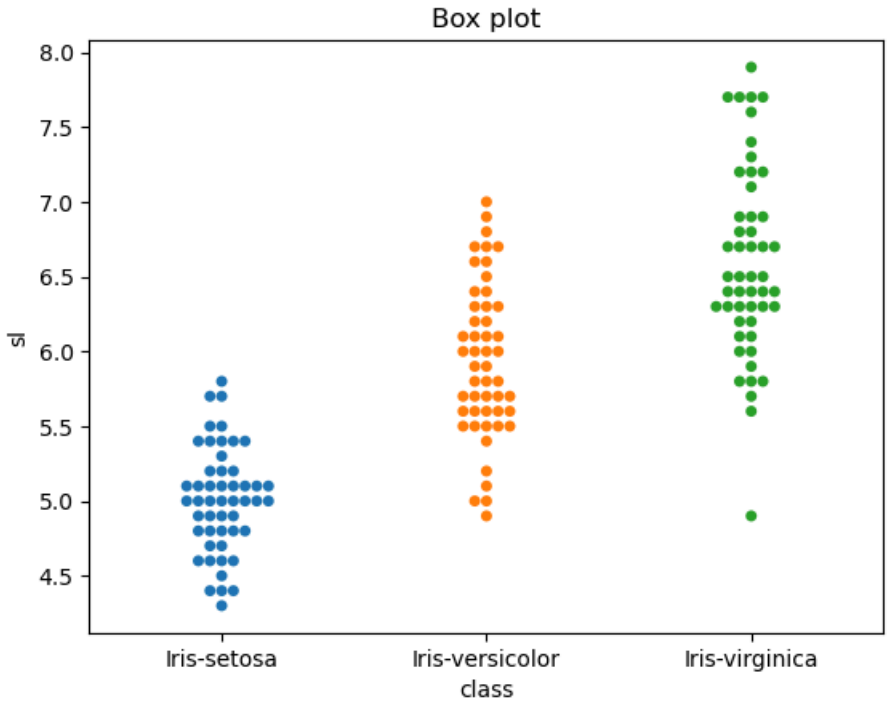
In [29]:
```
#box plot
sns.boxplot(x=iris['class'],y=iris['sl'])
plt.title('Box plot')
plt.show()
```



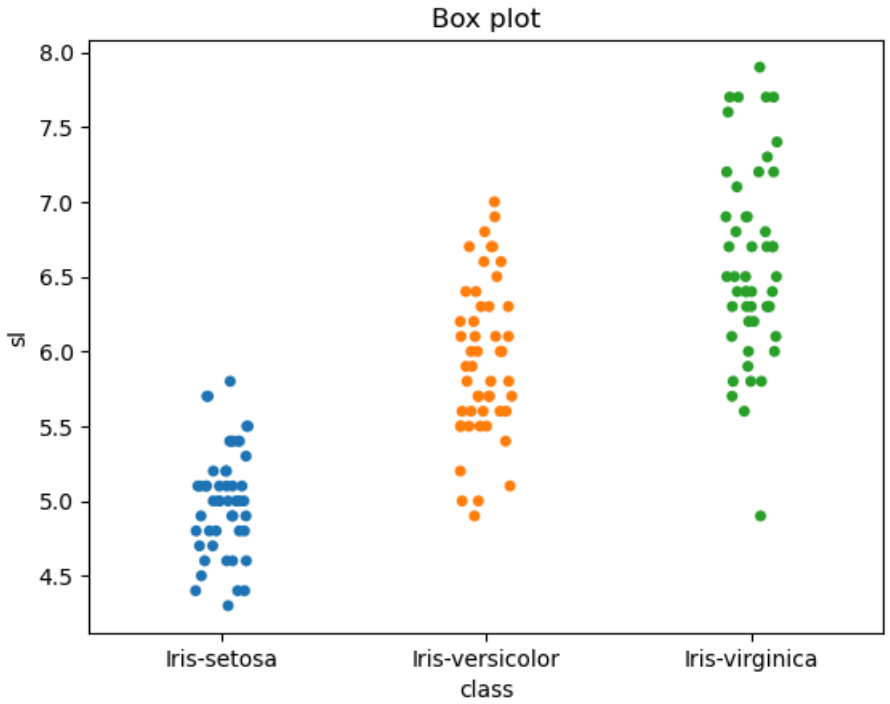
In [31]:
```
#boxenplot
sns.boxenplot(x=iris['class'],y=iris['sl'],hue=iris['class'])
plt.title('Box plot')
plt.show()
```



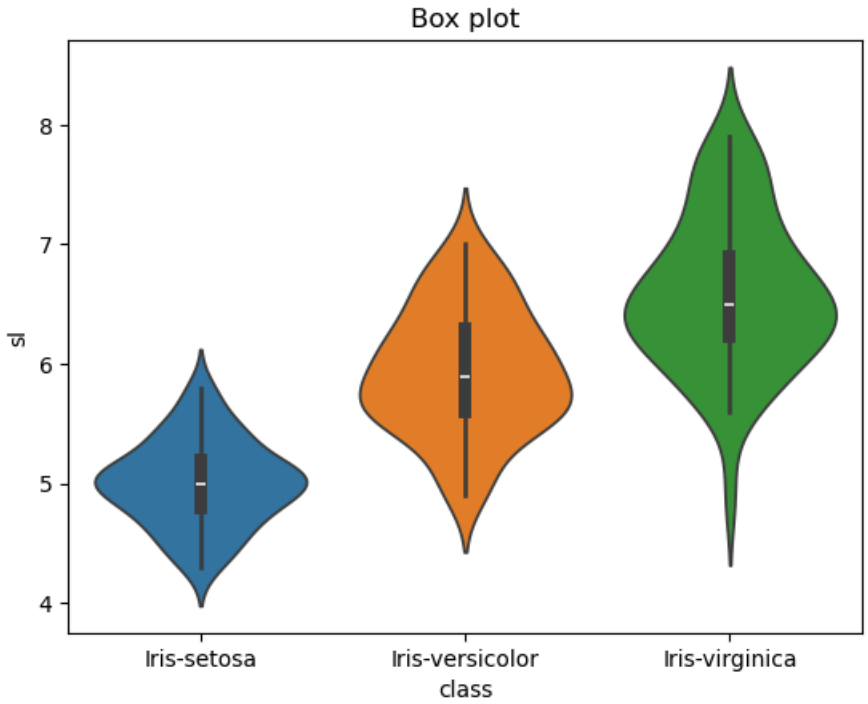
In [32]:
```
#swarmplot
sns.swarmplot(x=iris['class'],y=iris['sl'],hue=iris['class'])
plt.title('Box plot')
plt.show()
```



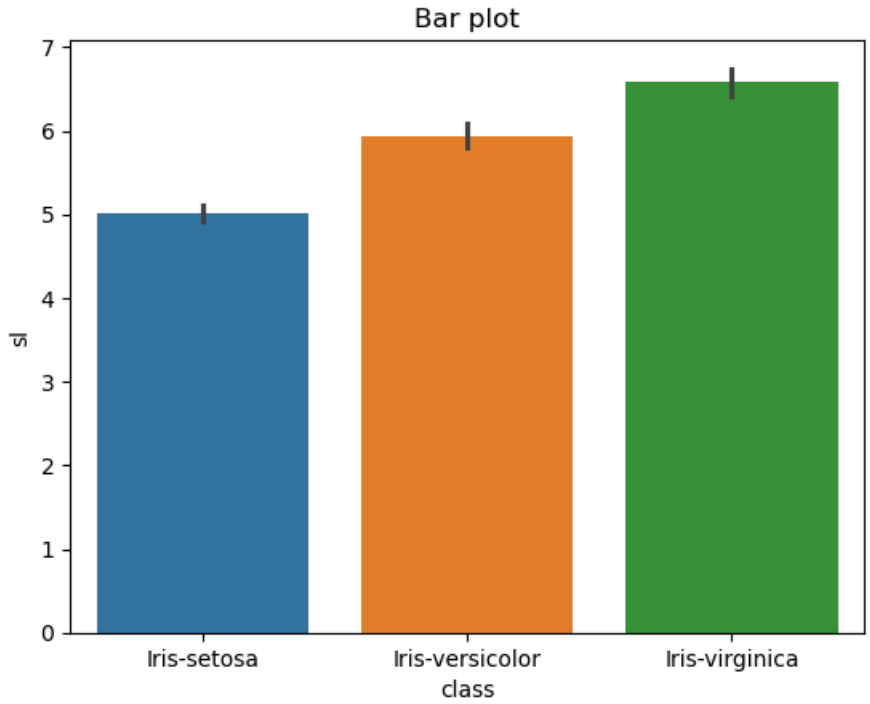
In [33]:
```
#strip plot
sns.stripplot(x=iris['class'],y=iris['sl'],hue=iris['class'])
plt.title('Box plot')
plt.show()
```



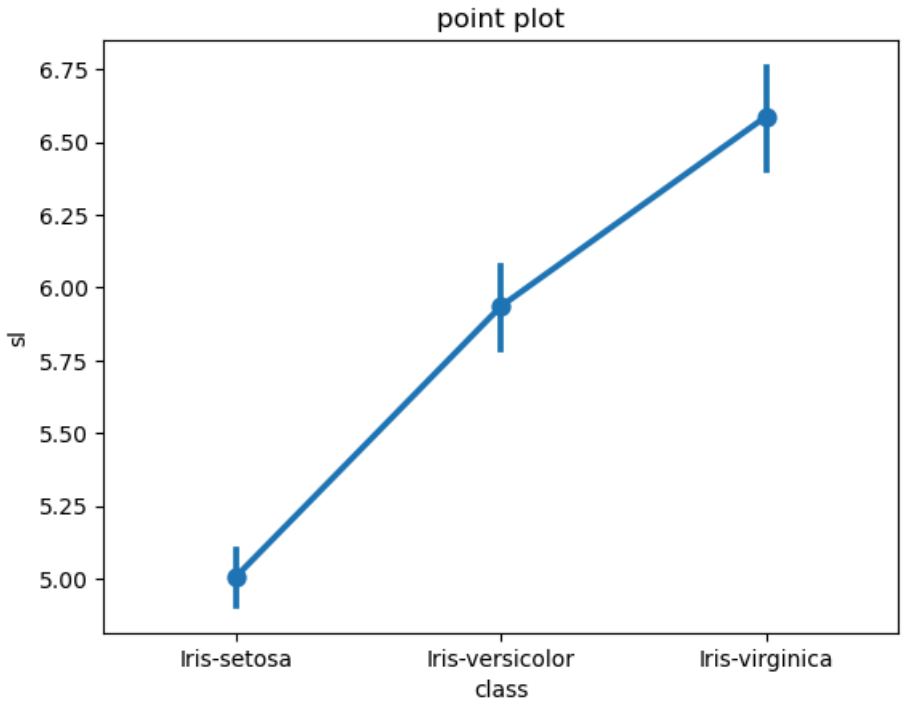
In [34]:
```
#violineplot
sns.violinplot(x=iris['class'],y=iris['sl'],hue=iris['class'])
plt.title('Box plot')
plt.show()
```



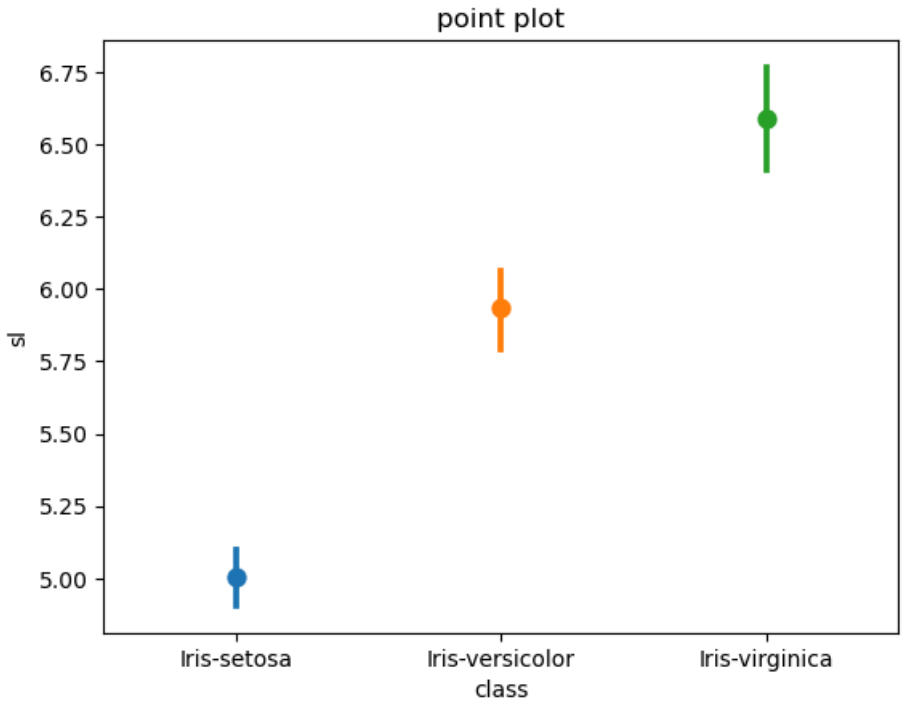
In [35]:
```
#barplot
sns.barplot(x=iris['class'],y=iris['sl'],hue=iris['class'])
plt.title('Bar plot')
plt.show()
```



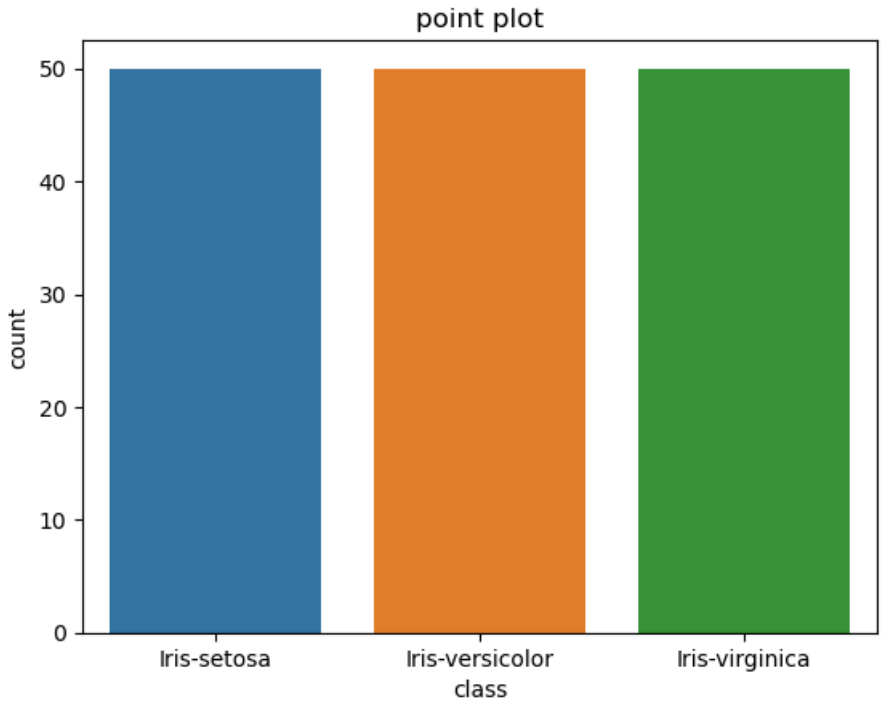
In [37]:
```
#pointplot
sns.pointplot(x=iris['class'],y=iris['sl'])
plt.title('point plot')
plt.show()
```



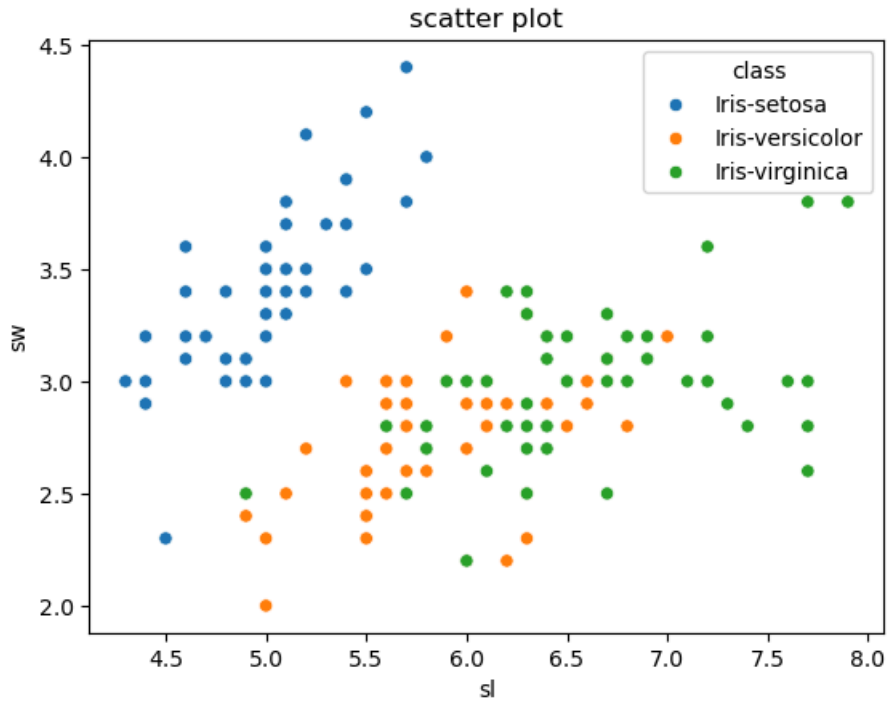
In [38]:
```
sns.pointplot(x=iris['class'],y=iris['sl'],hue=iris['class'])
plt.title('point plot')
plt.show()
```



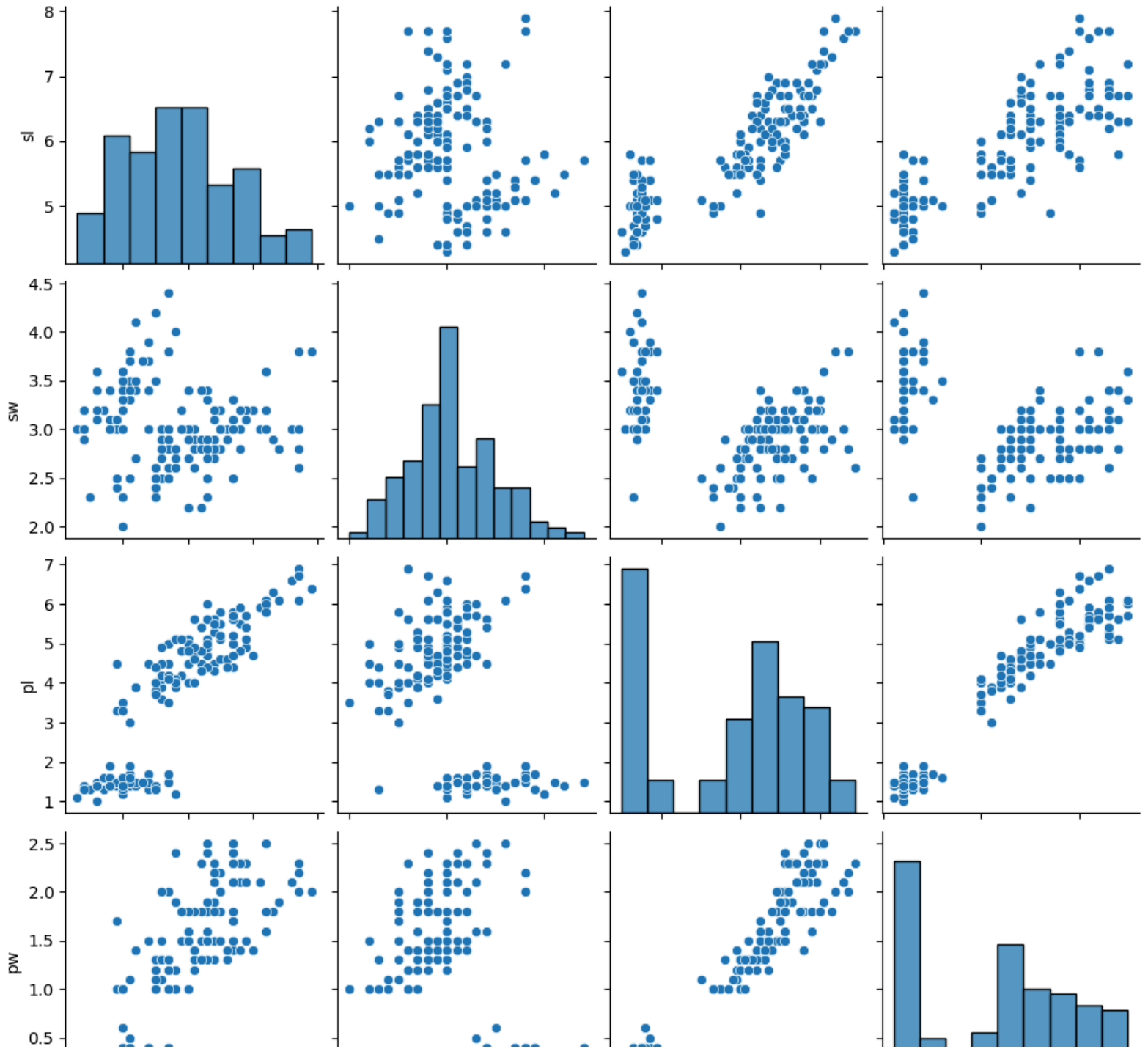
In [42]:
```
#countplot
sns.countplot(x=iris['class'],hue=iris['class'])
plt.title('point plot')
plt.show()
```

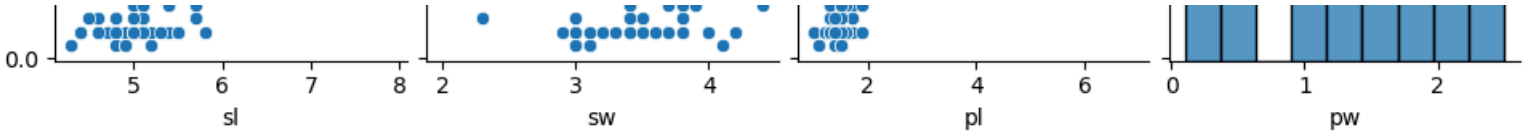


In [45]:
```
#scatterplot
sns.scatterplot(x=iris['sl'],y=iris['sw'],hue=iris['class'])
plt.title('scatter plot')
plt.show()
```

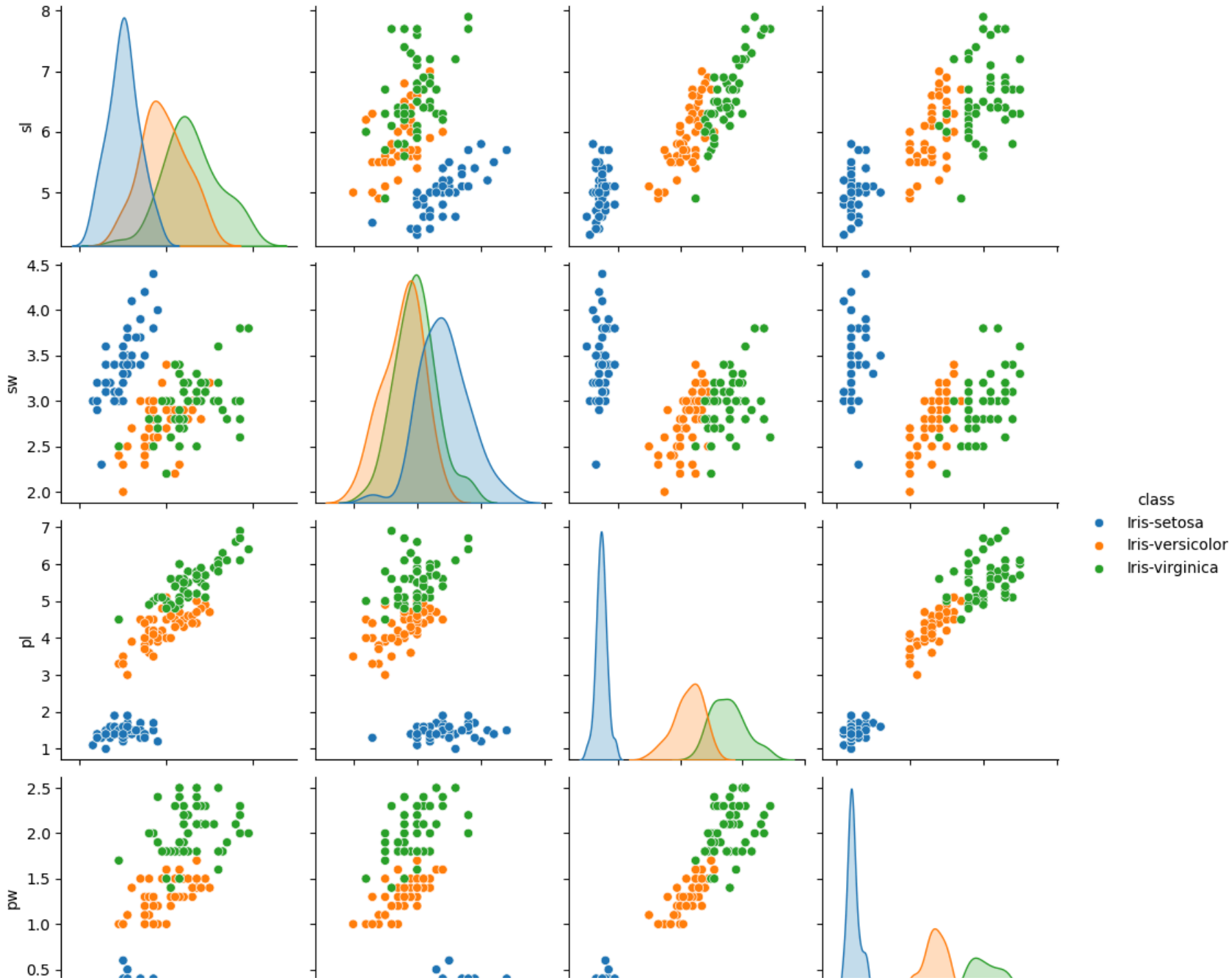


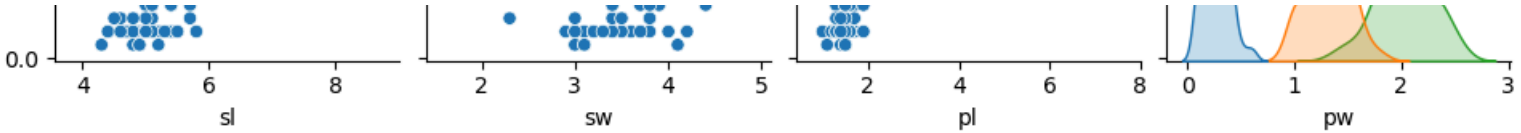
In [46]:
```
#pairplot
sns.pairplot(iris)
plt.show()
```


sl
sw
pl
pw


0.0
5
6
7
8
sl
2
3
4
sw
2
4
6
pl
0
1
2
pw

In [47]:
```
sns.pairplot(iris,hue='class')
plt.show()
```


sl
sw
pl
pw
class
Iris-setosa
Iris-versicolor
Iris-virginica



In [ ]: