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Intern started: 01-July-2023

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

```
!gdown 1xUYRNb4xYDQ2c2aJ4FRYWsFIkToXaWP_
```

```
Downloading...
From: https://drive.google.com/uc?id=1xUYRNb4xYDQ2c2aJ4FRYWsFIkToXaWP_
To: /content/iris.csv
100% 5.12k/5.12k [00:00<00:00, 14.7MB/s]
```

```
iris = pd.read_csv('iris.csv')
iris
```

	ID	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm
0	1	5.1	3.5	1.4	0.2
1	2	4.9	3.0	1.4	0.2
2	3	4.7	3.2	1.3	0.2
					0.2
4	5	5.0	3.6	1.4	0.2
...	...	...	...	...	..
145	146	6.7	3.0	5.2	2.3

To undo cell deletion use Ctrl+M Z or the Undo option in the Edit menu

```
iris = iris.drop('ID',axis=1)
iris
```

	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm	C
0	5.1	3.5	1.4	0.2	se
1	4.9	3.0	1.4	0.2	se
2	4.7	3.2	1.3	0.2	se
3	4.6	3.1	1.5	0.2	se
4	5.0	3.6	1.4	0.2	se
...	...	...	...	...	
145	6.7	3.0	5.2	2.3	virg

```
iris.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   Sepallengthincm  150 non-null    float64
 1   Sepalwidthincm   150 non-null    float64
```

```
 2   Petallengthincm  150 non-null    float64
 3   Petalwidthincm   150 non-null    float64
 4   Class            150 non-null    object
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

```
iris.describe()
```

	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000

```
iris.isna().sum()
```

```
Sepallengthincm    0
Sepalwidthincm     0
Petallengthincm    0
Petalwidthincm     0
Class              0
dtype: int64
```

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```
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: Class, dtype: int64
```

```
iris.head()
```

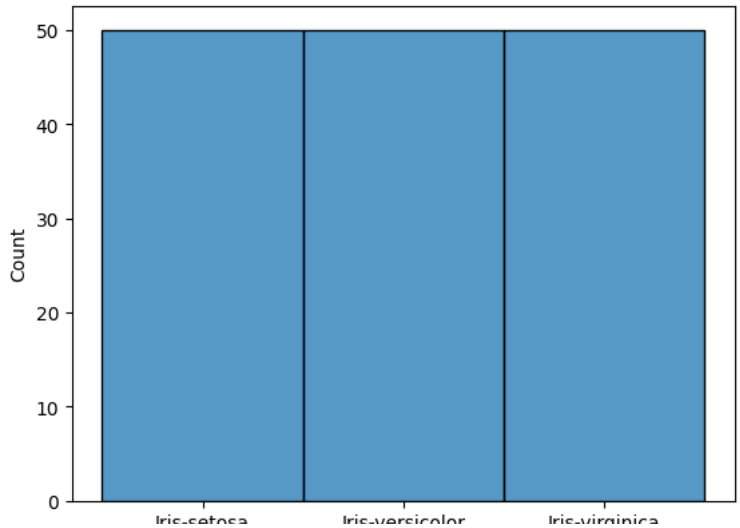
	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm	Clas
0	5.1	3.5	1.4	0.2	Iris setosa
1	4.9	3.0	1.4	0.2	Iris setosa
2	4.7	3.2	1.3	0.2	Iris

UniVariate Analysis

```
plt.figure(figsize=(6,4))
sns.histplot(iris['Sepallengthincm'])
plt.show()
```

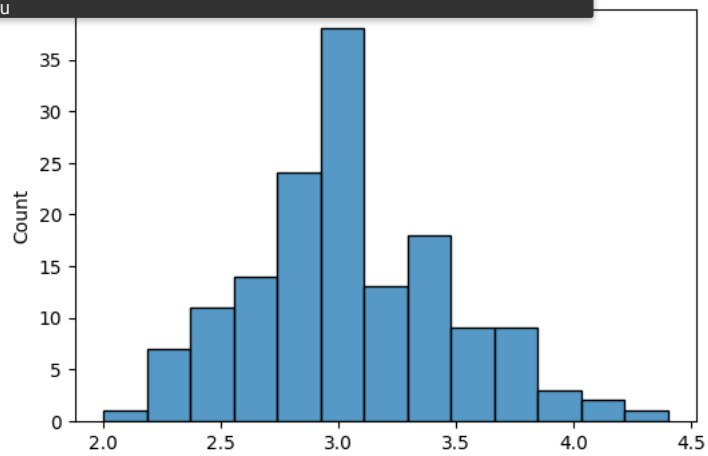
```
sns.histplot(iris['Class'])
```

```
<Axes: xlabel='Class', ylabel='Count'>
```

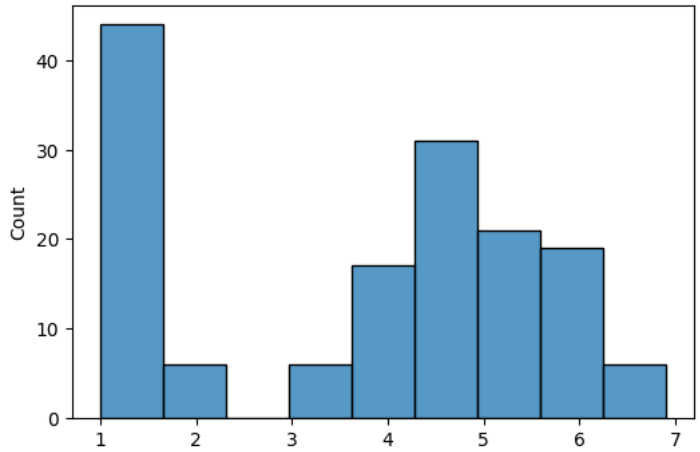



```
plt.figure(figsize=(6,4))
sns.histplot(iris['Sepalwidthincm'])
```

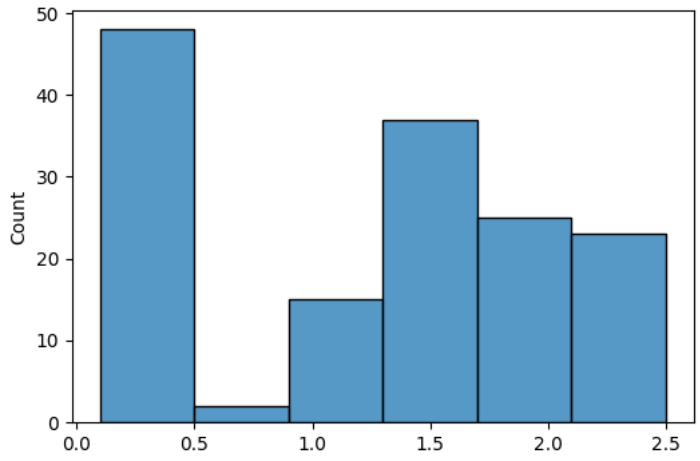
To undo cell deletion use Ctrl+M Z or the Undo option in the Edit menu




```
plt.figure(figsize=(6,4))
sns.histplot(iris['Petallengthincm'])
plt.show()
```

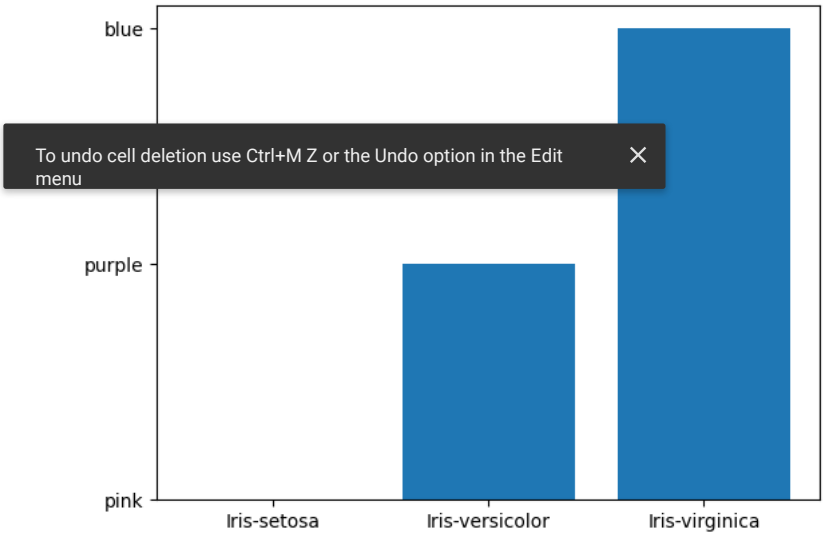


```
plt.figure(figsize=(6,4))
sns.histplot(iris['Petalwidthincm'],bins=6)
plt.show()
```




```
plt.bar(iris["Class"],iris["color"])
```

```
<BarContainer object of 150 artists>
```



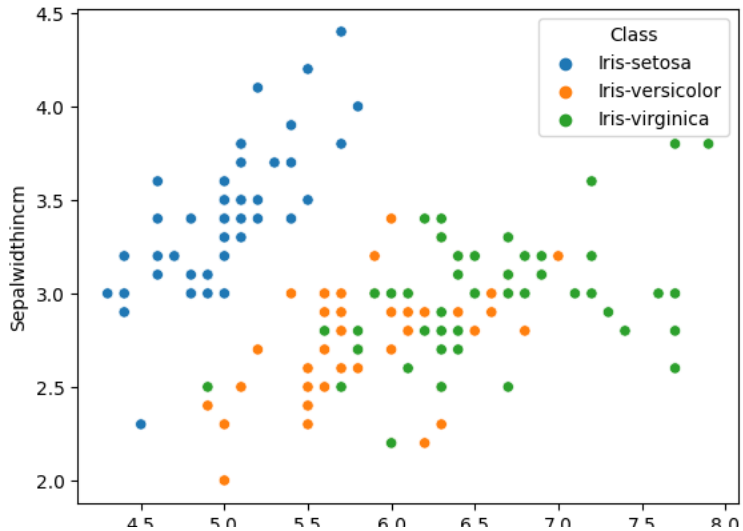
MultiVariate Analysis

```
iris['color'] = ['pink' if i=='Iris-setosa' else 'purple' if i=='Iris-versicolor'  else 'blue' for i in iris['Class']]
iris
```

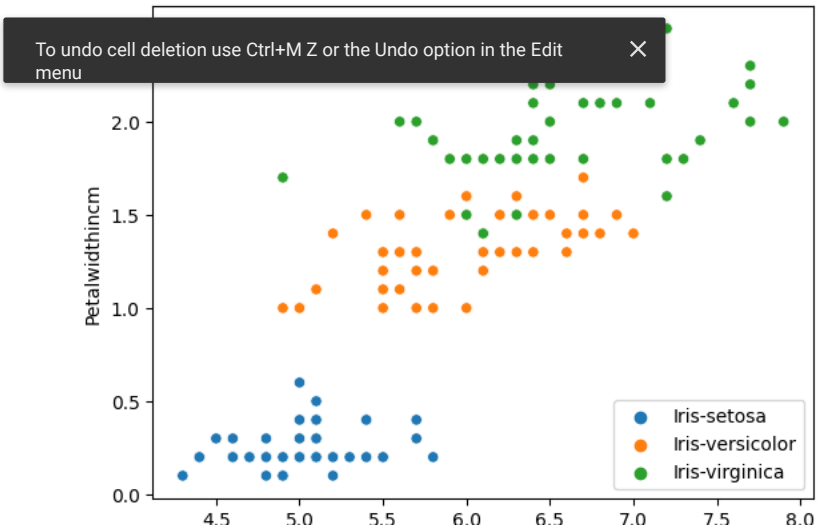
	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm	Class	color
0	5.1	3.5	1.4	0.2	Iris-setosa	pink
1	4.9	3.0	1.4	0.2	Iris-setosa	pink
2	4.7	3.2	1.3	0.2	Iris-setosa	pink
3	4.6	3.1	1.5	0.2	Iris-setosa	pink
4	5.0	3.6	1.4	0.2	Iris-setosa	pink
...	...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica	blue
146	6.3	2.5	5.0	1.9	Iris-virginica	blue

```
sns.scatterplot(data=iris,x='Sepallengthincm',y='Sepalwidthincm',hue='Class')
plt.show
```

```
<function matplotlib.pyplot.show(close=None, block=None)>
```




```
sns.scatterplot(data=iris,x='Sepallengthincm',y='Petalwidthincm',hue='Class')
plt.legend(loc='lower right')
plt.show()
```



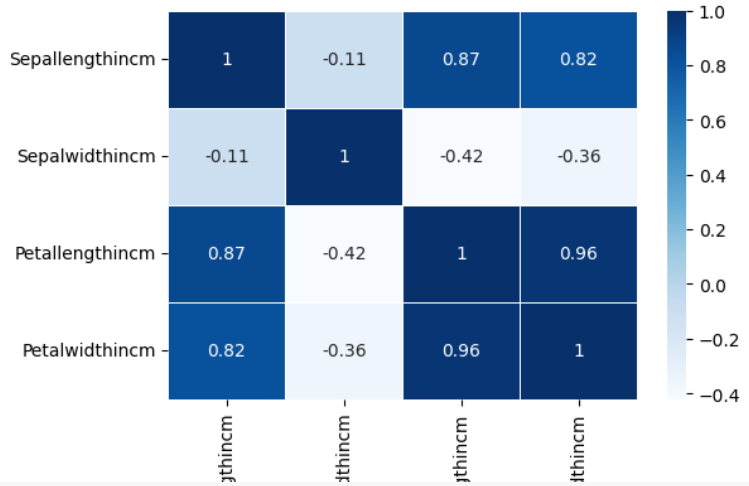

```
iris.corr()
```

```
<ipython-input-21-156dd03bc859>:1: FutureWarning: The default value of num
  iris.corr()
```

	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwi
Sepallengthincm	1.000000	-0.109369	0.871754	(
Sepalwidthincm	-0.109369	1.000000	-0.420516	-(
Petallengthincm	0.871754	-0.420516	1.000000	(
Petalwidthincm	0.817954	-0.356544	0.962757	

```
plt.figure(figsize=(6,4))
sns.heatmap(iris.corr(), annot=True, cmap='Blues',linewidth=0.5)
plt.show()
```

```
<ipython-input-22-d4c2a8171b8e>:2: FutureWarning: The default value of num
  sns.heatmap(iris.corr(), annot=True, cmap='Blues',linewidth=0.5)
```




```
from sklearn.preprocessing import LabelEncoder
label_encoder = LabelEncoder()
iris['encoded_labels'] = label_encoder.fit_transform(iris['Class'])
iris.head()
```

	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm	Clas
0	5.1	3.5	1.4	0.2	Iris setosa
1	4.9	3.0	1.4	0.2	Iris setosa
				0.2	Iris

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Evaluate the performance of a model

```
from sklearn.model_selection import train_test_split
x_value = iris.drop(['Class','color'],axis=1)
y_value = iris['Class']
x_train, x_test, y_train, y_test = train_test_split(x_value, y_value, test_size=0.2)
```

```
x_value
```

	Sepallengthincm	Sepalwidthincm	Petallengthincm	Petalwidthincm	enc
0	5.1	3.5	1.4	0.2	
1	4.9	3.0	1.4	0.2	
2	4.7	3.2	1.3	0.2	
3	4.6	3.1	1.5	0.2	
4	5.0	3.6	1.4	0.2	
...	...	...	...	...	
145	6.7	3.0	5.2	2.3	
146	6.3	2.5	5.0	1.9	
147	6.5	3.0	5.2	2.0	
148	6.2	3.4	5.4	2.3	

```
from sklearn.linear_model import LogisticRegression
model = LogisticRegression()
```

```
model.fit(x_train,y_train)
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/linear_model/_logistic.py:
STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max_iter) or scale the data as shown in
    https://scikit-learn.org/stable/modules/preprocessing.html
Please also refer to the documentation for alternative solver options:
    https://scikit-learn.org/stable/modules/linear_model.html#logistic-reg
  n_iter_i = _check_optimize_result(
```

▾ LogisticRegression
LogisticRegression()

```
print('Accuracy:',model.score(x_test,y_test)*100)
```

```
Accuracy: 100.0
```

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