In [7]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
from sklearn.datasets import load_iris
import warnings
warnings.filterwarnings("ignore")
```

In [8]:
```
data = load_iris()
```

In [9]:
```
data
```

Out[9]:

```
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```

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Data Set Characteristics:**\n\n    :Number of Instances: 150 (50 in each of thr
ee classes)\n    :Number of Attributes: 4 numeric, predictive attributes and th
e class\n    :Attribute Information:\n        - sepal length in cm\n        - s
epal width in cm\n        - petal length in cm\n        - petal width in cm\n
- class:\n                - Iris-Setosa\n                - Iris-Versicolour\n
- Iris-Virginica\n                \n    :Summary Statistics:\n\n    ===========
=== ==== ==== ======= ===== ====================\n                    Min  Max
Mean    SD   Class Correlation\n    ============== ==== ==== ======= ===== ====
================\n    sepal length:   4.3  7.9   5.84   0.83    0.7826\n    sep
al width:    2.0  4.4   3.05   0.43   -0.4194\n    petal length:   1.0  6.9
3.76   1.76    0.9490  (high!)\n    petal width:    0.1  2.5   1.20   0.76
0.9565  (high!)\n    ============== ==== ==== ======= ===== ====================
=\n\n    :Missing Attribute Values: None\n    :Class Distribution: 33.3% for ea
ch of 3 classes.\n    :Creator: R.A. Fisher\n    :Donor: Michael Marshall (MARS
HALL%PLU@io.arc.nasa.gov)\n    :Date: July, 1988\n\nThe famous Iris database, f
irst used by Sir R.A. Fisher. The dataset is taken\nfrom Fisher\'s paper. Note
that it\'s the same as in R, but not as in the UCI\nMachine Learning Repositor
y, which has two wrong data points.\n\nThis is perhaps the best known database
to be found in the\npattern recognition literature.  Fisher\'s paper is a class
```

```
ic in the field and\nis referenced frequently to this day.  (See Duda & Hart, f
or example.)  The\ndata set contains 3 classes of 50 instances each, where each
class refers to a\ntype of iris plant.  One class is linearly separable from th
e other 2; the\nlatter are NOT linearly separable from each other.\n\n.. topi
c:: References\n\n   - Fisher, R.A. "The use of multiple measurements in taxono
mic problems"\n     Annual Eugenics, 7, Part II, 179-188 (1936); also in "Contr
ibutions to\n     Mathematical Statistics" (John Wiley, NY, 1950).\n   - Duda,
R.O., & Hart, P.E. (1973) Pattern Classification and Scene Analysis.\n     (Q32
7.D83) John Wiley & Sons.  ISBN 0-471-22361-1.  See page 218.\n   - Dasarathy,
B.V. (1980) "Nosing Around the Neighborhood: A New System\n     Structure and C
lassification Rule for Recognition in Partially Exposed\n     Environments".  I
EEE Transactions on Pattern Analysis and Machine\n     Intelligence, Vol. PAMI-
2, No. 1, 67-71.\n   - Gates, G.W. (1972) "The Reduced Nearest Neighbor Rule".
IEEE Transactions\n     on Information Theory, May 1972, 431-433.\n   - See als
o: 1988 MLC Proceedings, 54-64.  Cheeseman et al"s AUTOCLASS II\n     conceptua
l clustering system finds 3 classes in the data.\n   - Many, many more ...',
 'feature_names': ['sepal length (cm)',
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  'petal width (cm)'],
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 'data_module': 'sklearn.datasets.data'}
```

In [10]:
```
df = pd.DataFrame()
df[data['feature_names']] = data['data']
df['label'] = data['target']
```

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

Out[11]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	label
0	5.1	3.5	1.4	0.2	0
1	4.9	3.0	1.4	0.2	0
2	4.7	3.2	1.3	0.2	0
3	4.6	3.1	1.5	0.2	0
4	5.0	3.6	1.4	0.2	0

In [12]:
```
df.shape
```

Out[12]:
```
(150, 5)
```

In [13]:
```
df.info()
```

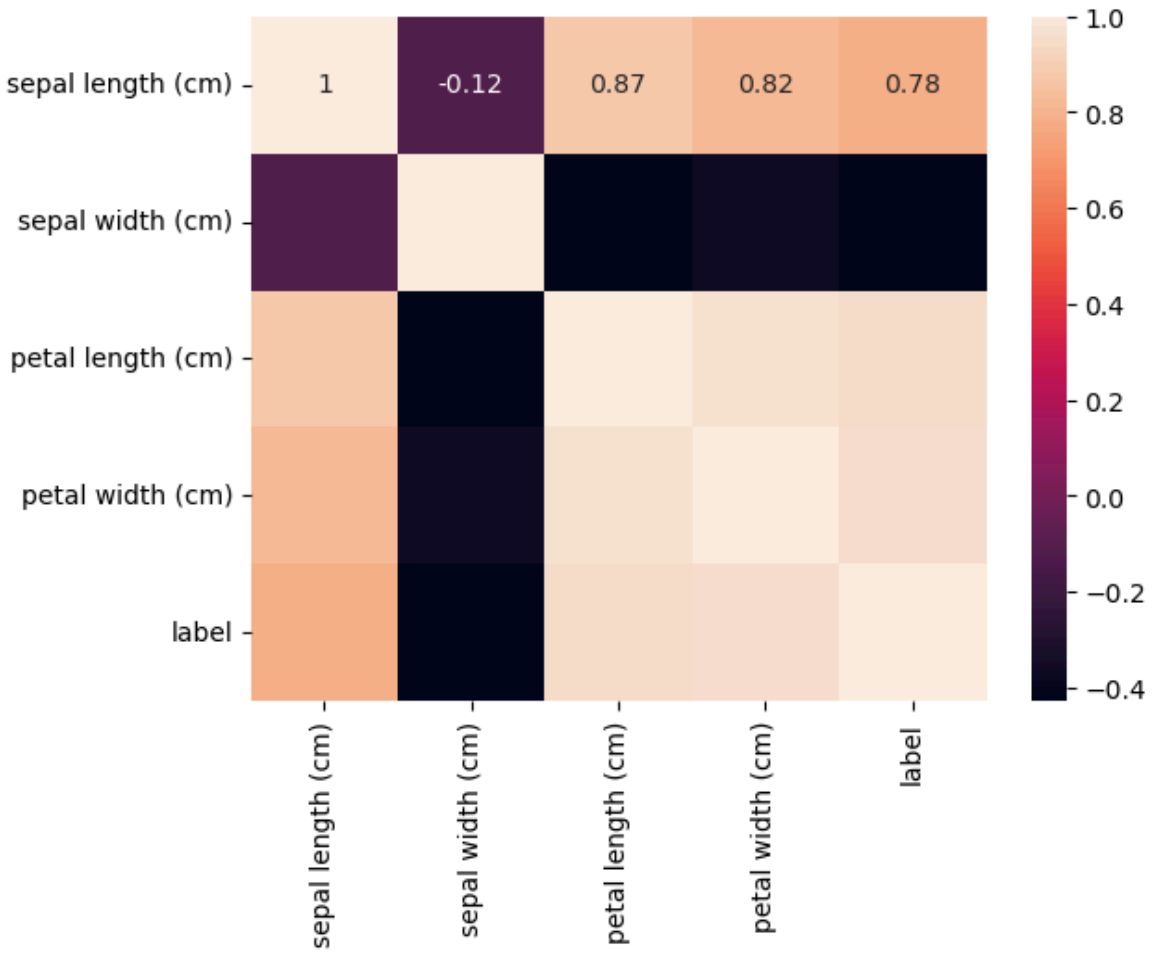
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   sepal length (cm)  150 non-null    float64
 1   sepal width (cm)   150 non-null    float64
 2   petal length (cm)  150 non-null    float64
 3   petal width (cm)   150 non-null    float64
 4   label              150 non-null    int32
dtypes: float64(4), int32(1)
memory usage: 5.4 KB
```

In [14]:
```
df.describe()
```

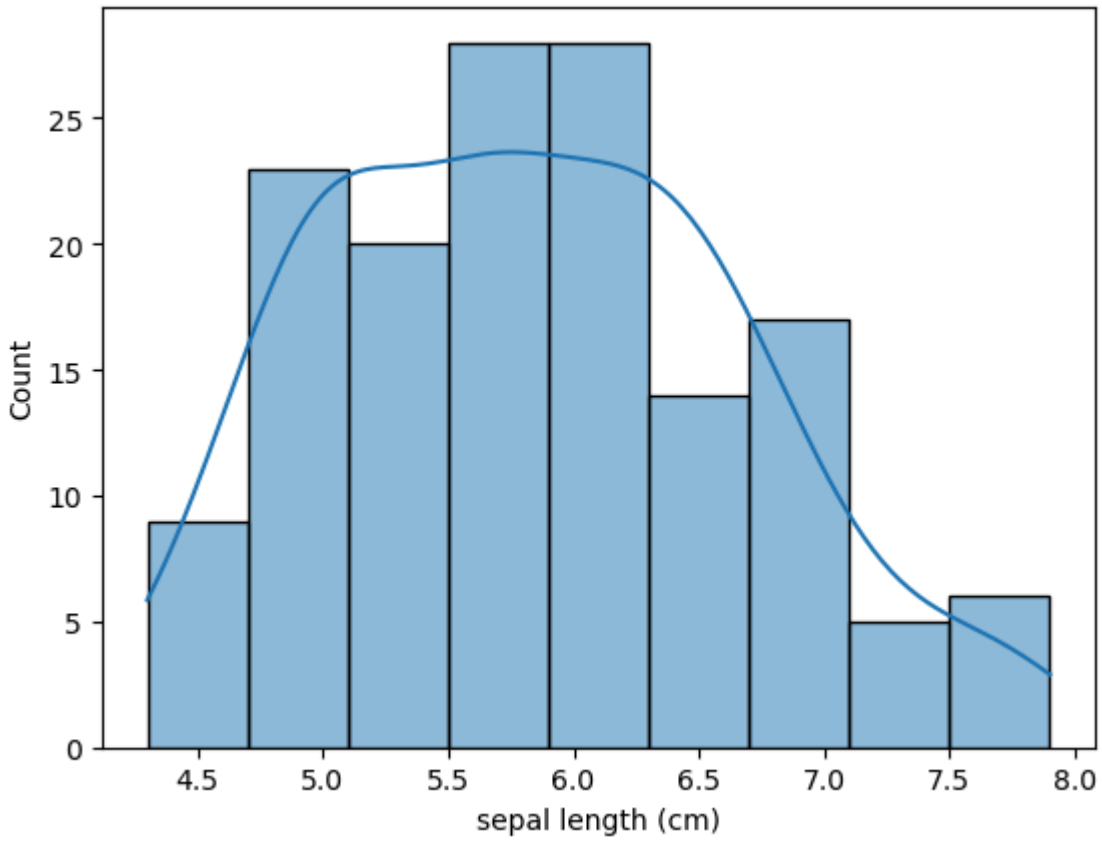
Out[14]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	label
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333	1.000000
std	0.828066	0.435866	1.765298	0.762238	0.819232
min	4.300000	2.000000	1.000000	0.100000	0.000000
25%	5.100000	2.800000	1.600000	0.300000	0.000000
50%	5.800000	3.000000	4.350000	1.300000	1.000000
75%	6.400000	3.300000	5.100000	1.800000	2.000000
max	7.900000	4.400000	6.900000	2.500000	2.000000

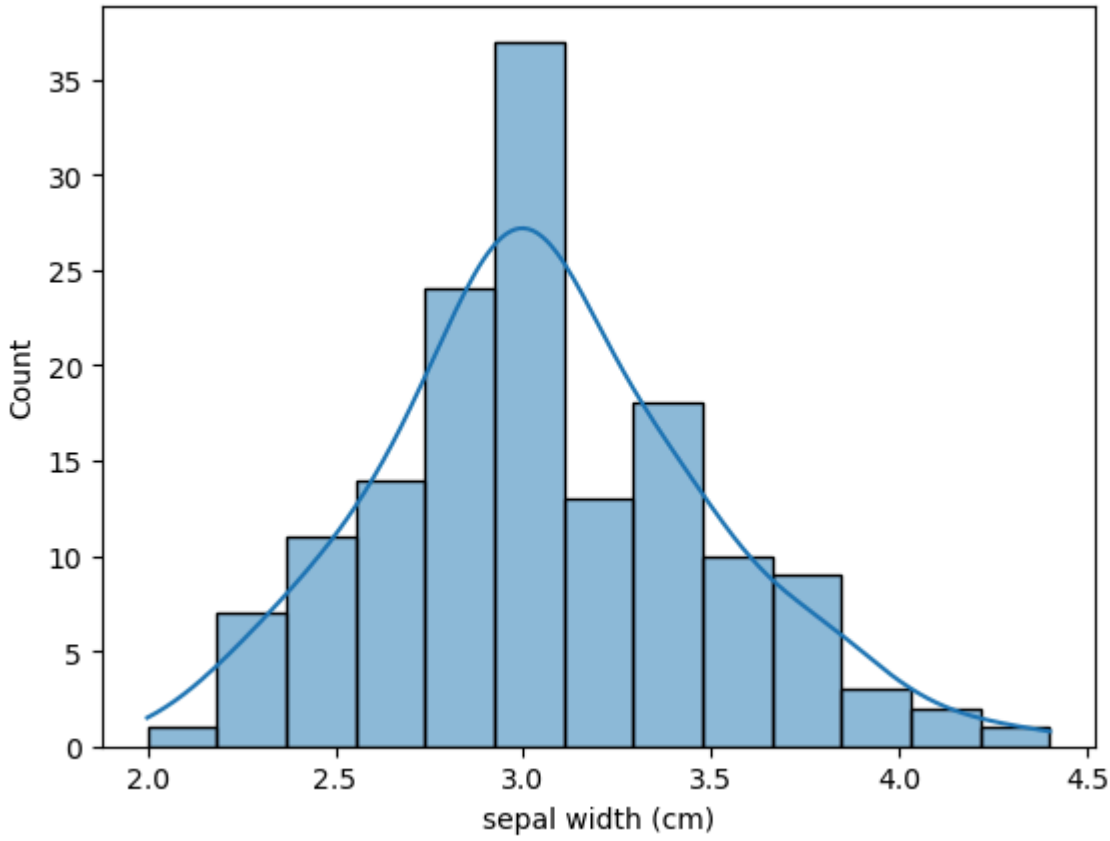
In [16]:
```
sns.heatmap(df.corr(), annot=True)
plt.show()
```



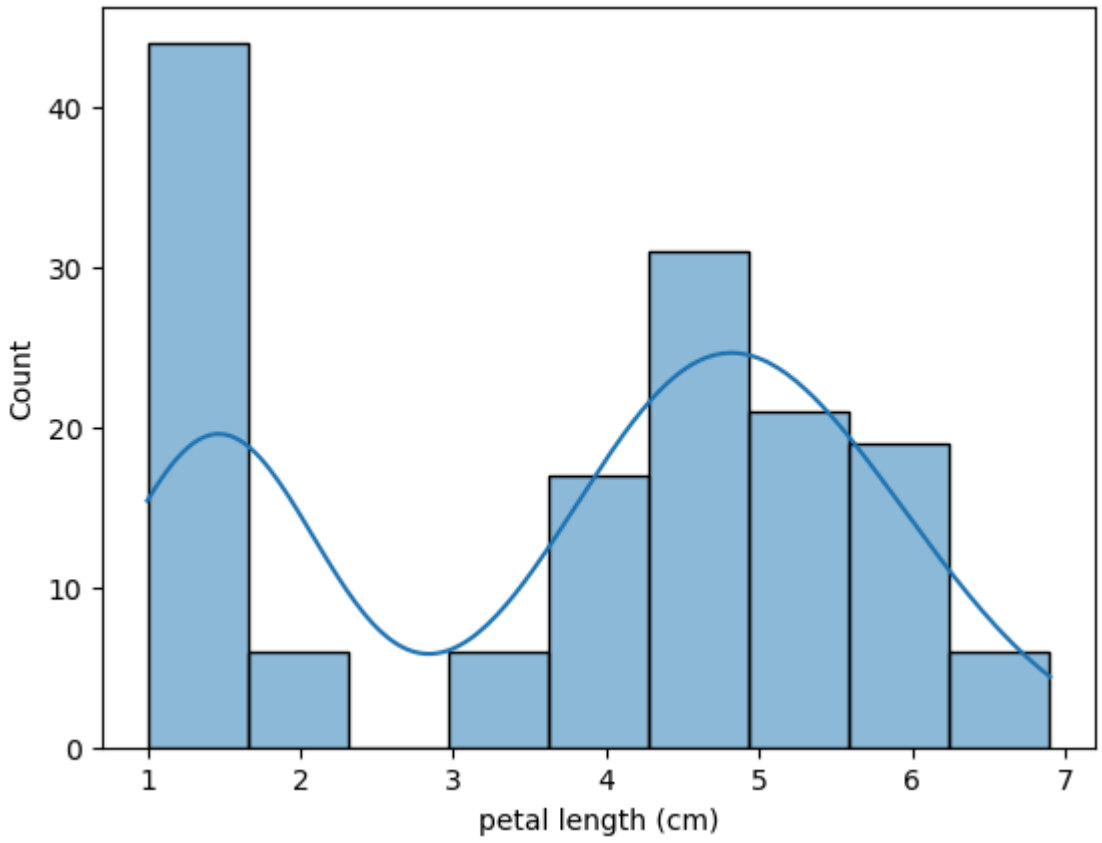
In [17]:
```
sns.histplot(df["sepal length (cm)"], kde=True)
plt.show()
```



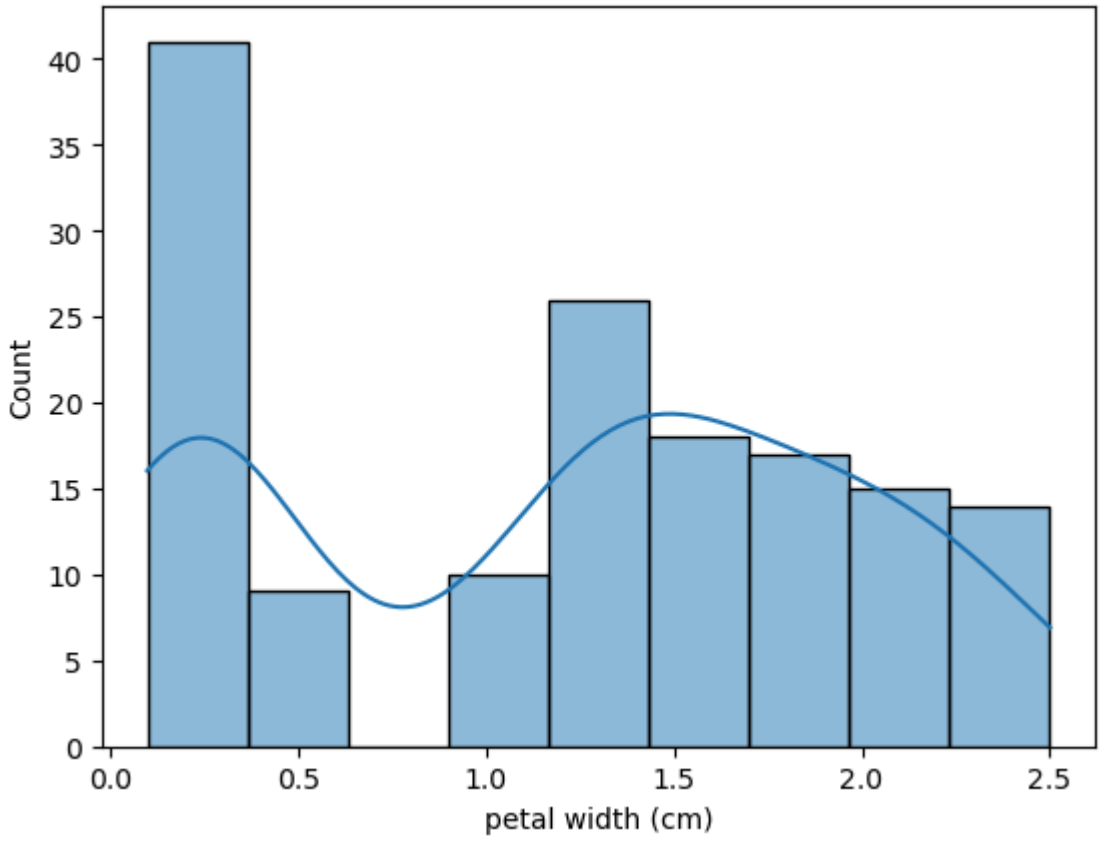
In [18]:
```
sns.histplot(df["sepal width (cm)"], kde=True)
plt.show()
```



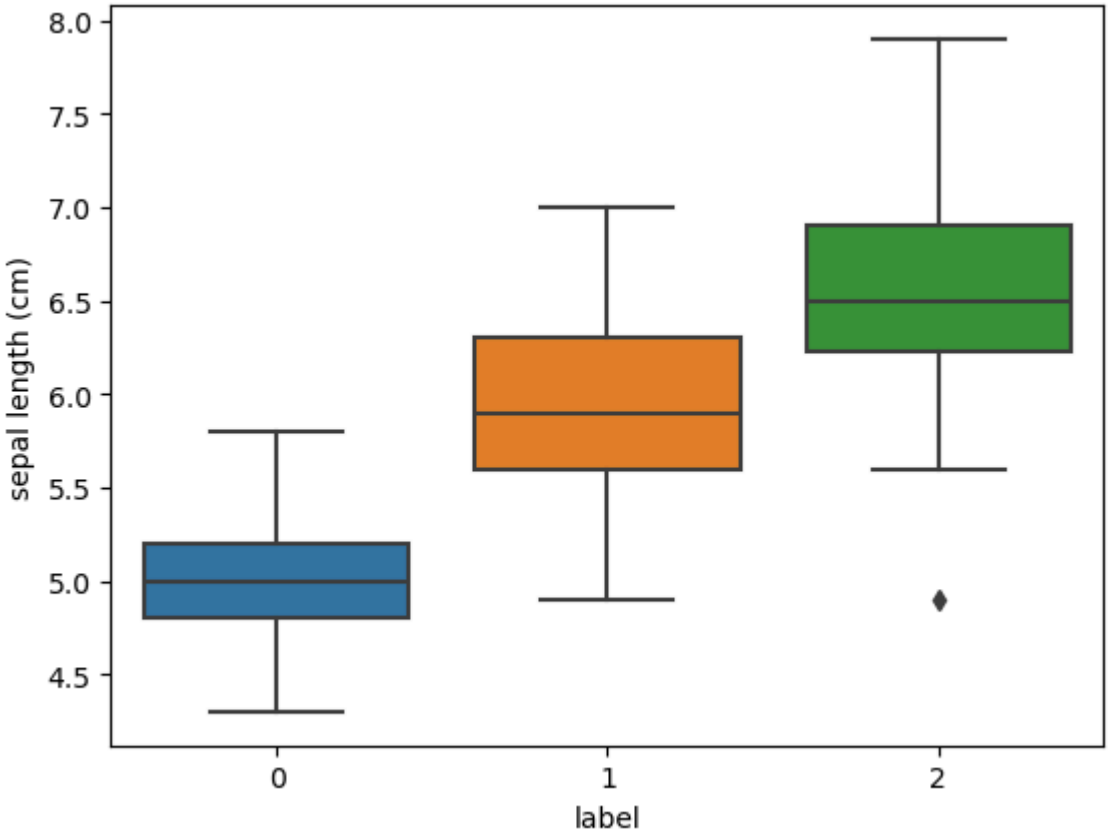
In [19]:
```
sns.histplot(df["petal length (cm)"], kde=True)
plt.show()
```



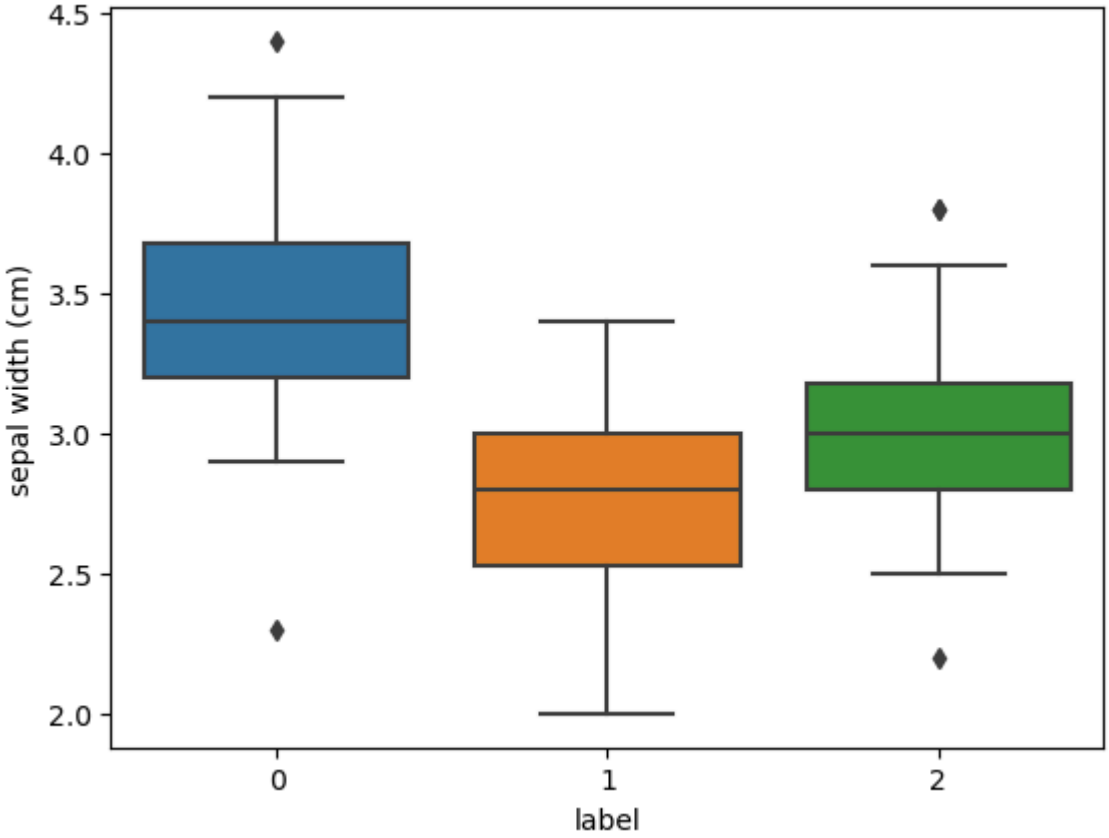
In [20]:
```
sns.histplot(df["petal width (cm)"], kde=True)
plt.show()
```



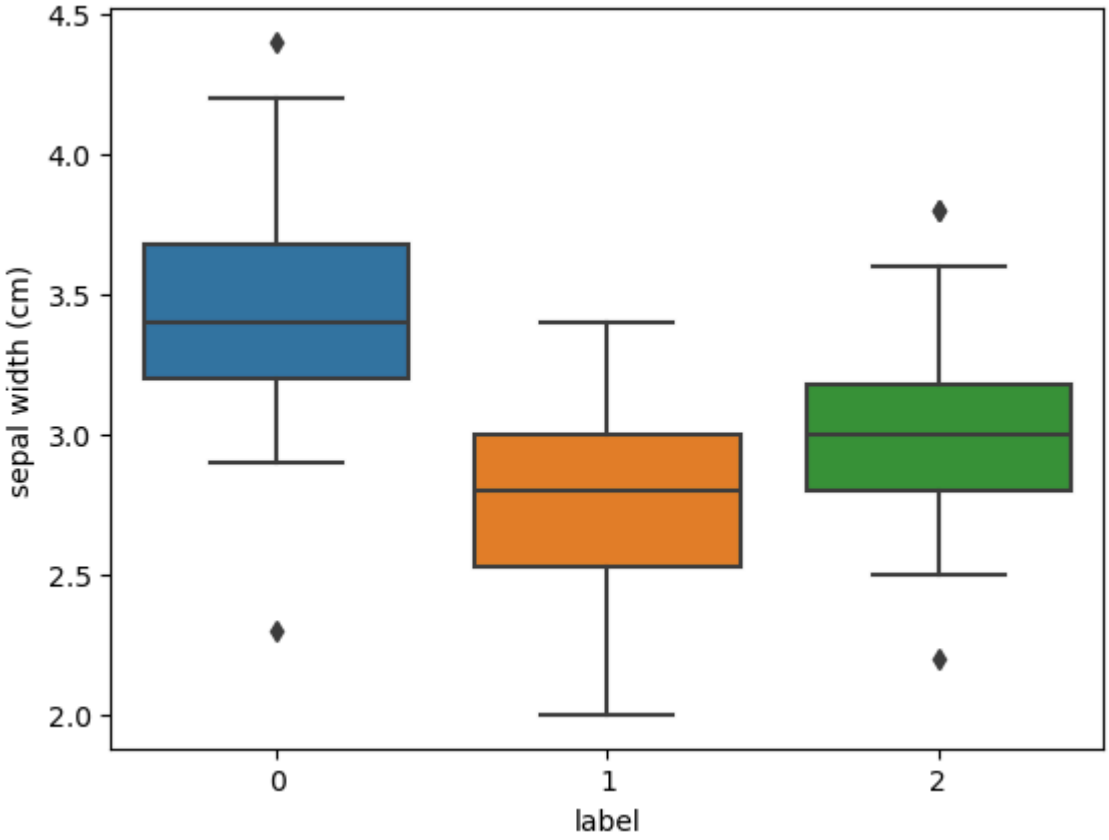
In [21]:
```
sns.boxplot(x=df['label'], y=df["sepal length (cm)"])
plt.show()
```



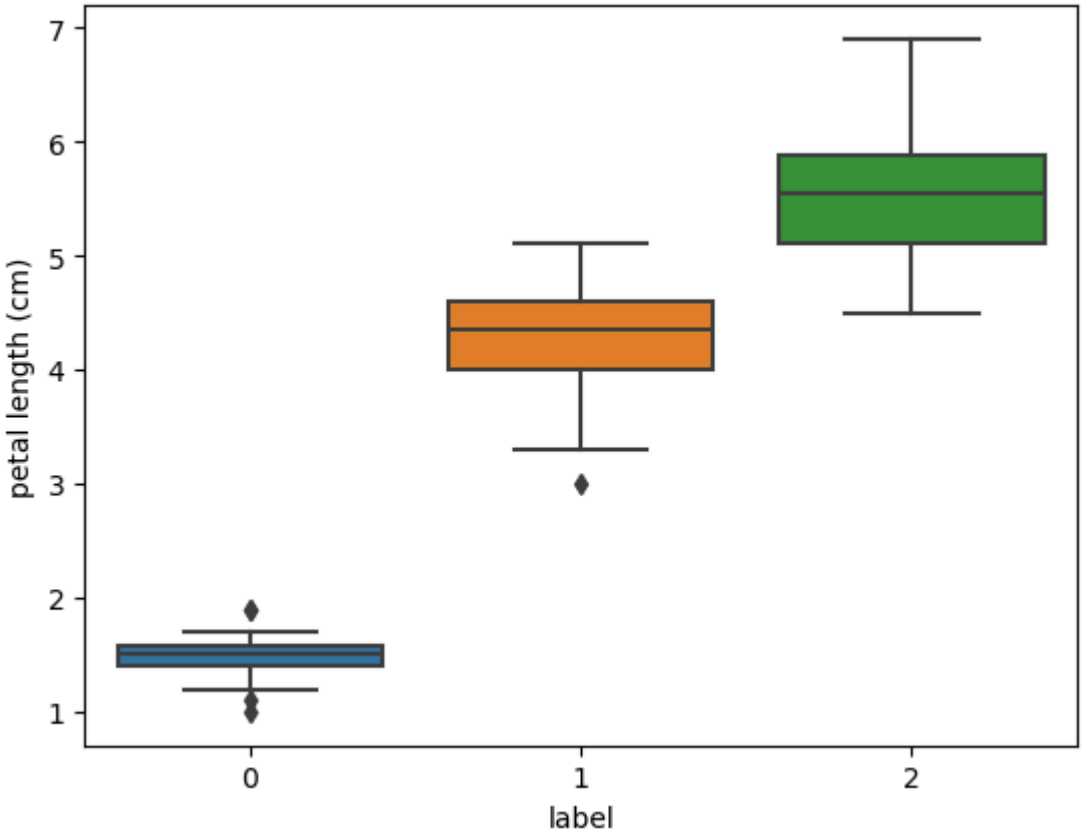
In [22]:
```
sns.boxplot(x=df['label'] ,y=df["sepal width (cm)"])
plt.show()
```



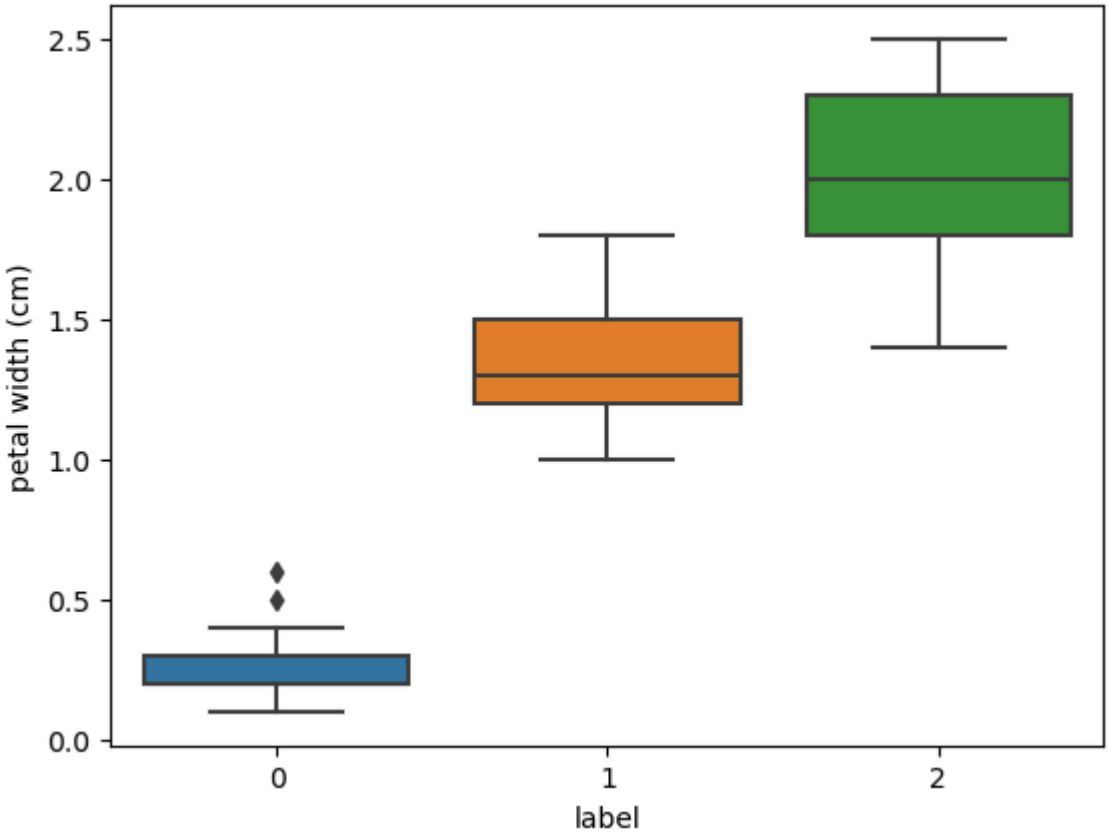
In [23]:



In [24]:
```
sns.boxplot(x=df["label"] ,y=df["petal length (cm)"])
plt.show()
```



In [25]:
```
sns.boxplot(x=df['label'] ,y=df["petal width (cm)"])
plt.show()
```



Name:-Swayambhu Bhapkar

Roll no:- 13121