In [36]:

```
import pandas as pd
import numpy as np
import warnings
warnings.filterwarnings('ignore')
from pandas.plotting import scatter_matrix
from matplotlib import pyplot as plt
from sklearn import model_selection
from sklearn.metrics import classification_report
from sklearn.metrics import confusion_matrix
from sklearn.metrics import accuracy_score
from sklearn.linear_model import LogisticRegression
from sklearn.tree import DecisionTreeClassifier
from sklearn.neighbors import KNeighborsClassifier
from sklearn.discriminant_analysis import LinearDiscriminantAnalysis
from sklearn.naive_bayes import GaussianNB
from sklearn.svm import SVC
```

In [37]:

```
data = pd.read_csv("IRIS.csv")
```

In [38]:

```
data.head(30)
```

Out[38]:

	sepal_length	sepal_width	petal_length	petal_width	species
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
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa
10	5.4	3.7	1.5	0.2	Iris-setosa
11	4.8	3.4	1.6	0.2	Iris-setosa
12	4.8	3.0	1.4	0.1	Iris-setosa
13	4.3	3.0	1.1	0.1	Iris-setosa
14	5.8	4.0	1.2	0.2	Iris-setosa
15	5.7	4.4	1.5	0.4	Iris-setosa
16	5.4	3.9	1.3	0.4	Iris-setosa
17	5.1	3.5	1.4	0.3	Iris-setosa
18	5.7	3.8	1.7	0.3	Iris-setosa
19	5.1	3.8	1.5	0.3	Iris-setosa
20	5.4	3.4	1.7	0.2	Iris-setosa
21	5.1	3.7	1.5	0.4	Iris-setosa
22	4.6	3.6	1.0	0.2	Iris-setosa
23	5.1	3.3	1.7	0.5	Iris-setosa
24	4.8	3.4	1.9	0.2	Iris-setosa
25	5.0	3.0	1.6	0.2	Iris-setosa
26	5.0	3.4	1.6	0.4	Iris-setosa
27	5.2	3.5	1.5	0.2	Iris-setosa
28	5.2	3.4	1.4	0.2	Iris-setosa
29	4.7	3.2	1.6	0.2	Iris-setosa

```
In [39]: data.describe()
```

Out[39]:

	sepal_length	sepal_width	petal_length	petal_width
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
max	7.900000	4.400000	6.900000	2.500000

```
In [40]: data.head()
```

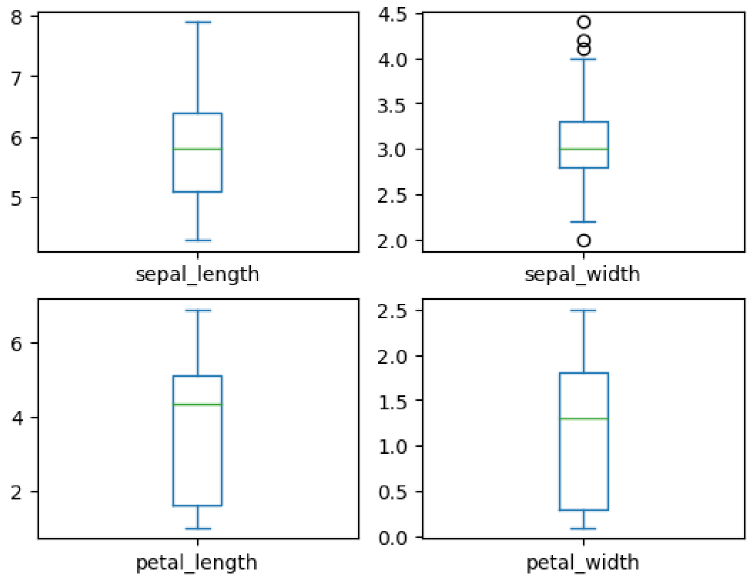
Out[40]:

	sepal_length	sepal_width	petal_length	petal_width	species
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 [41]: data.shape
```

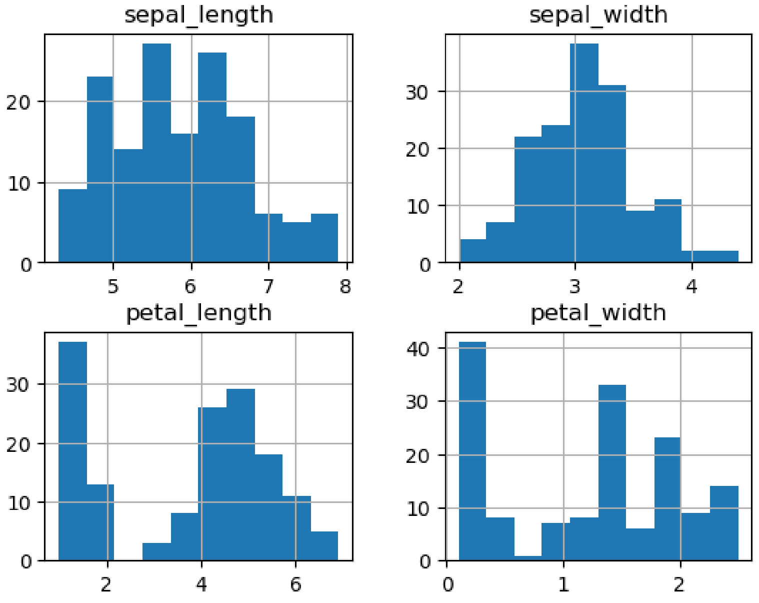
```
Out[41]: (150, 5)
```

```
In [42]: data.plot(kind ='box', subplots=True , layout=(2,2),sharex =False,sharey=False)
         plt.show()
```



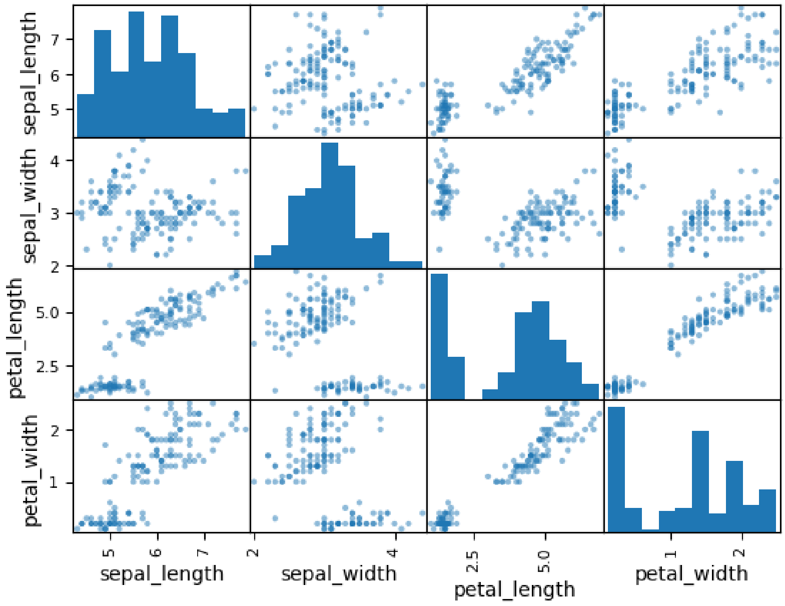
In [43]:

```
data.hist()
plt.show()
```



In [44]:

```
scatter_matrix(data)
plt.show()
```



In [45]:

```
array = data.values
X=array[:,4]
Y=array[:,0:4]
x=Y
y=X
validation_size =0.20
seed = 6
x_train,x_test,y_train,y_test =model_selection.train_test_split(x,y, test_size= validation_size, random_state=seed)
```

In [46]:

```
seed=6
scoring = 'accuracy'
```

In [47]:

```
models =[]
models.append(('LR',LogisticRegression()))
models.append(('LDA',LinearDiscriminantAnalysis()))
models.append(('KNN',KNeighborsClassifier()))
models.append(('CART',DecisionTreeClassifier()))
models.append(('NB',GaussianNB()))
models.append(('SVM',SVC()))

results=[]
```

In [48]:

```

names =[]
for name,model in models:

    kfold = model_selection.KFold(n_splits=10,random_state=None)
    cv_results = model_selection.cross_val_score(model,x_train,y_train,cv=kfold,scoring=scoring)
    results.append(cv_results)
    names.append(name)
    msg="%s:%f (%f)" % (name,cv_results.mean(),cv_results.std())
    print(msg)
```

```
LR:0.950000 (0.076376)
LDA:0.975000 (0.038188)
KNN:0.958333 (0.055902)
CART:0.933333 (0.072648)
NB:0.966667 (0.055277)
SVM:0.950000 (0.076376)
```

In [ ]: