```python
import numpy as np
import pandas as pd
from sklearn.datasets import load_iris
```

```python
dataset=load_iris()
X=dataset.data
y=dataset.target
print(X.shape)
print(y.shape)
```

```
(150, 4)
(150,)
```

```python
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.25, random_state =

print(X_train.shape)
print(X_test.shape)

print(y_train.shape)
print(y_test.shape)
```

```
(112, 4)
(38, 4)
(112,)
(38,)
```

```python
from sklearn import tree
from sklearn.metrics import accuracy_score
import matplotlib.pyplot as plt

accuracy=[]
for i in range(1,10):
  model = tree.DecisionTreeClassifier(max_depth=i,random_state=0)
  model.fit(X_train, y_train)
  pred=model.predict(X_test)
  score=accuracy_score(y_test,pred)
  accuracy.append(score)

plt.plot(range(1,10),accuracy,color='blue', marker='o',markersize=10)
```

```
model = tree.DecisionTreeClassifier(criterion='entropy',max_depth=4,random_state=0)
model.fit(X_train, y_train)
pred=model.predict(X_test)
score=accuracy_score(y_test,pred)
print("Accuracy:=",score*100)
```

```
Accuracy:= 97.36842105263158
```

```
print(X_test[3,:])
print(y_test[3])
ans=model.predict([[7.3,2.9,6.3,1.8]])
print(ans)
```

```
[7.3 2.9 6.3 1.8]
2
[2]
```

```
tree.plot_tree(model);
```

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