```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
import matplotlib.pyplot as plt
from sklearn import tree


df=pd.read_csv("/home/zoo.csv")
df.head()from sklearn import tree
```

	animal_name	hair	feathers	eggs	milk	airborne	aquatic	predator	toothe
0	aardvark	1	0	0	1	0	0	1	
1	antelope	1	0	0	1	0	0	0	
2	bass	0	0	1	0	0	1	1	
3	bear	1	0	0	1	0	0	1	
4	boar	1	0	0	1	0	0	1	

```
class_type_output=df["class_type"]
df=df.drop("class_type", axis=1).drop("animal_name", axis=1)
print(df)
```

```
     hair  feathers  eggs  milk  airborne  aquatic  predator  toothed  \
0       1         0     0     1         0        0         1        1
1       1         0     0     1         0        0         0        1
2       0         0     1     0         0        1         1        1
3       1         0     0     1         0        0         1        1
4       1         0     0     1         0        0         1        1
..    ...       ...   ...   ...       ...      ...       ...      ...
96      1         0     0     1         0        0         0        1
97      1         0     1     0         1        0         0        0
98      1         0     0     1         0        0         1        1
99      0         0     1     0         0        0         0        0
100     0         1     1     0         1        0         0        0

     backbone  breathes  venomous  fins  legs  tail  domestic  catsize
0           1         1         0     0     4     0         0        1
1           1         1         0     0     4     1         0        1
2           1         0         0     1     0     1         0        0
3           1         1         0     0     4     0         0        1
4           1         1         0     0     4     1         0        1
..        ...       ...       ...   ...   ...   ...       ...      ...
96          1         1         0     0     2     1         0        1
97          0         1         1     0     6     0         0        0
98          1         1         0     0     4     1         0        1
99          0         1         0     0     0     0         0        0
100         1         1         0     0     2     1         0        0
```

```
     [101 rows x 16 columns]
```

```
from sklearn.model_selection import train_test_split


x_train, x_test, y_train, y_test = train_test_split(df, class_type_output, test_si


from sklearn.tree import DecisionTreeClassifier
classifier = DecisionTreeClassifier()
classifier.fit(x_train, y_train)
```

```
     DecisionTreeClassifier()
```

```
y_prediction = classifier.predict(x_test)
y_prediction
```

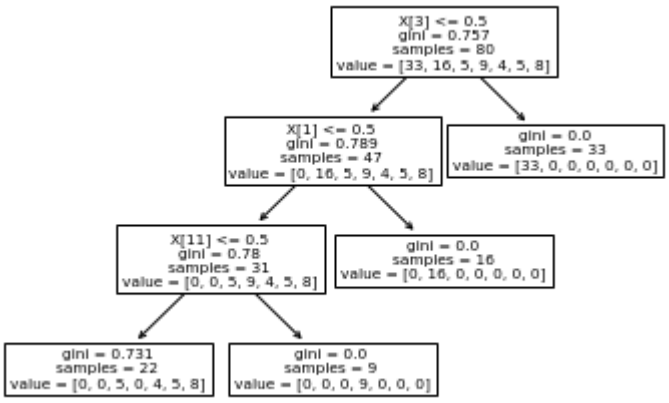
```
     array([6, 7, 4, 4, 2, 2, 1, 4, 1, 1, 1, 6, 7, 6, 1, 1, 2, 2, 4, 1, 1])
```

```
from sklearn.metrics import classification_report, confusion_matrix, accuracy_scor
confusion_matrix(y_test,y_prediction)


print(classification_report(y_test, y_prediction))


print(accuracy_score(y_test, y_prediction))


predicted_class = list(y_prediction)
actual_class = list(y_test)
for i in range(len(predicted_class)):
    print("Predicted class =", predicted_class[i],"\tActual class =",actual_class[
```

```
                  precision    recall  f1-score   support

               1       1.00      1.00      1.00         8
               2       1.00      1.00      1.00         4
               4       1.00      1.00      1.00         4
               6       1.00      1.00      1.00         3
               7       1.00      1.00      1.00         2

        accuracy                           1.00        21
       macro avg       1.00      1.00      1.00        21
    weighted avg       1.00      1.00      1.00        21

     1.0
     Predicted class = 6     Actual class = 6
     Predicted class = 7     Actual class = 7
     Predicted class = 4     Actual class = 4
     Predicted class = 4     Actual class = 4
     Predicted class = 2     Actual class = 2
     Predicted class = 2     Actual class = 2
     Predicted class = 1     Actual class = 1
     Predicted class = 4     Actual class = 4
```

```
Predicted class = 1     Actual class = 1
Predicted class = 1     Actual class = 1
Predicted class = 1     Actual class = 1
Predicted class = 6     Actual class = 6
Predicted class = 7     Actual class = 7
Predicted class = 6     Actual class = 6
Predicted class = 1     Actual class = 1
Predicted class = 1     Actual class = 1
Predicted class = 2     Actual class = 2
Predicted class = 2     Actual class = 2
Predicted class = 4     Actual class = 4
Predicted class = 1     Actual class = 1
Predicted class = 1     Actual class = 1
```

```
from sklearn.tree import DecisionTreeClassifier
clf = DecisionTreeClassifier(max_depth = 3,
                             random_state = 0)
clf.fit(x_train, y_train)
clf.predict(x_test)
tree.plot_tree(clf);
```



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