In [18]:

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

In [2]:

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

In [3]:

```
data.head()
```

Out[3]:

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa

In [5]:

```
x=data.iloc[:,:4]
x.head()
```

Out[5]:

	sepal.length	sepal.width	petal.length	petal.width
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

In [6]:

```
y=data.iloc[:,-1]
y.head()
```

Out[6]:

```
0    Setosa
1    Setosa
2    Setosa
3    Setosa
4    Setosa
Name: variety, dtype: object
```

In [7]:

```
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=.20)
```

In [8]:

```
classifier=DecisionTreeClassifier()
```

In [10]:

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

Out[10]:

```
DecisionTreeClassifier()
```

In [12]:

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

In [13]:

```
from sklearn.metrics import accuracy_score
ac=accuracy_score(y_test,y_pred)
```

In [14]:

```
ac
```

Out[14]:

```
0.9666666666666667
```

In [16]:

```
from sklearn.tree import export_text

r=export_text(classifier)
print(r)
```

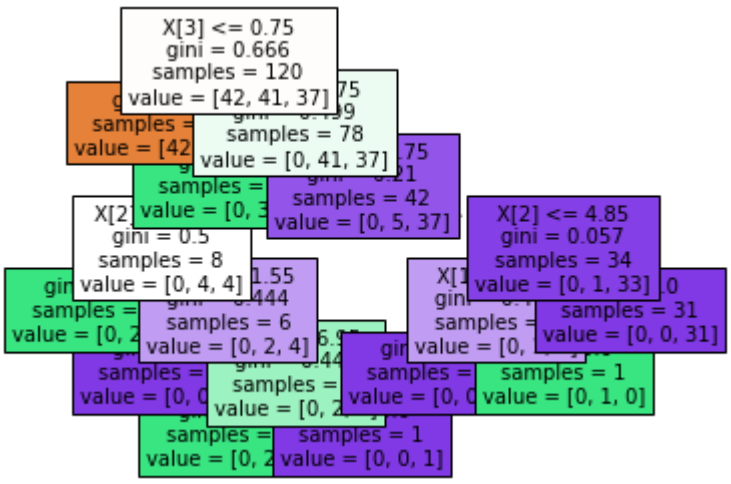
```
|--- feature_3 <= 0.75
|   |--- class: Setosa
|--- feature_3 >  0.75
|   |--- feature_2 <= 4.75
|   |   |--- class: Versicolor
|   |--- feature_2 >  4.75
|   |   |--- feature_3 <= 1.75
|   |   |   |--- feature_2 <= 4.95
|   |   |   |   |--- class: Versicolor
|   |   |   |--- feature_2 >  4.95
|   |   |   |   |--- feature_3 <= 1.55
|   |   |   |   |   |--- class: Virginica
|   |   |   |   |--- feature_3 >  1.55
|   |   |   |   |   |--- feature_0 <= 6.95
|   |   |   |   |   |   |--- class: Versicolor
|   |   |   |   |   |--- feature_0 >  6.95
|   |   |   |   |   |   |--- class: Virginica
|   |   |--- feature_3 >  1.75
|   |   |   |--- feature_2 <= 4.85
|   |   |   |   |--- feature_1 <= 3.10
|   |   |   |   |   |--- class: Virginica
|   |   |   |   |--- feature_1 >  3.10
|   |   |   |   |   |--- class: Versicolor
|   |   |   |--- feature_2 >  4.85
|   |   |   |   |--- class: Virginica
```

In [20]:

```
tree.plot_tree(classifier,fontsize=10,filled=True)
```

Out[20]:

```
[Text(0.3, 0.9285714285714286, 'X[3] <= 0.75\ngini = 0.666\nsamples = 120\nv
alue = [42, 41, 37]'),
 Text(0.2, 0.7857142857142857, 'gini = 0.0\nsamples = 42\nvalue = [42, 0,
0]'),
 Text(0.4, 0.7857142857142857, 'X[2] <= 4.75\ngini = 0.499\nsamples = 78\nva
lue = [0, 41, 37]'),
 Text(0.3, 0.6428571428571429, 'gini = 0.0\nsamples = 36\nvalue = [0, 36,
0]'),
 Text(0.5, 0.6428571428571429, 'X[3] <= 1.75\ngini = 0.21\nsamples = 42\nval
ue = [0, 5, 37]'),
 Text(0.2, 0.5, 'X[2] <= 4.95\ngini = 0.5\nsamples = 8\nvalue = [0, 4, 4]'),
 Text(0.1, 0.35714285714285715, 'gini = 0.0\nsamples = 2\nvalue = [0, 2,
0]'),
 Text(0.3, 0.35714285714285715, 'X[3] <= 1.55\ngini = 0.444\nsamples = 6\nva
lue = [0, 2, 4]'),
 Text(0.2, 0.21428571428571427, 'gini = 0.0\nsamples = 3\nvalue = [0, 0,
3]'),
 Text(0.4, 0.21428571428571427, 'X[0] <= 6.95\ngini = 0.444\nsamples = 3\nva
lue = [0, 2, 1]'),
 Text(0.3, 0.07142857142857142, 'gini = 0.0\nsamples = 2\nvalue = [0, 2,
0]'),
 Text(0.5, 0.07142857142857142, 'gini = 0.0\nsamples = 1\nvalue = [0, 0,
1]'),
 Text(0.8, 0.5, 'X[2] <= 4.85\ngini = 0.057\nsamples = 34\nvalue = [0, 1, 3
3]'),
 Text(0.7, 0.35714285714285715, 'X[1] <= 3.1\ngini = 0.444\nsamples = 3\nval
ue = [0, 1, 2]'),
 Text(0.6, 0.21428571428571427, 'gini = 0.0\nsamples = 2\nvalue = [0, 0,
2]'),
 Text(0.8, 0.21428571428571427, 'gini = 0.0\nsamples = 1\nvalue = [0, 1,
0]'),
 Text(0.9, 0.35714285714285715, 'gini = 0.0\nsamples = 31\nvalue = [0, 0, 3
1]')]
```



In [ ]: