Assignemnment

Data ko spilt krne k bad uski accuracy score check kren gey

- 20 80
- 30,70
- 10,90

Sample value, predictions (5-10)UNKONWN sample value de kr predictions nikalni hai\

3 classification hen versicular,setosa,virgenica\

(sepal_length, sepal_width, petal_width, petal_width) in 4 columns ki value dene k bad predictions kya ati hai

In [ ]:
```
#Load sample dataset
import pandas as pd
import numpy as np
import seaborn as sns
df = sns.load_dataset('iris')
df.head()
```

Out[ ]:

	sepal_length	sepal_width	petal_length	petal_width	species
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 [ ]:
```
import matplotlib.pyplot as plt
from sklearn.tree import DecisionTreeClassifier
X = df.iloc[: , :-1]
y = df.iloc[: ,-1:]
```

In [ ]:
```
X.head()
```

Out[ ]:

	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 [ ]:
```
y.head()
```

Out[ ]:

	species
0	setosa
1	setosa
2	setosa
3	setosa
4	setosa

In [ ]:
```
from sklearn.tree import DecisionTreeClassifier
from sklearn.tree import plot_tree
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

X_train, X_test, y_train, y_test, = train_test_split(X, y, test_size= 0.3) #80 and 20

model = DecisionTreeClassifier().fit(X_train, y_train)
model.predict([[6,9,9,1], [1,3,2,2],[6,0,6,8],[2,3,6,6]])
```

Out[ ]:
```
C:\Users\Faiza\AppData\Local\Programs\Python\Python310\lib\site-packages\sklearn\bas
e.py:450: UserWarning: X does not have valid feature names, but DecisionTreeClassifie
r was fitted with feature names
  warnings.warn(
array(['virginica', 'setosa', 'virginica', 'virginica'], dtype=object)
```

In [ ]:
```
model.predict([[8,9,3,1]])
```

Out[ ]:
```
C:\Users\Faiza\AppData\Local\Programs\Python\Python310\lib\site-packages\sklearn\bas
e.py:450: UserWarning: X does not have valid feature names, but DecisionTreeClassifie
r was fitted with feature names
  warnings.warn(
array(['versicolor'], dtype=object)
```

In [ ]:
```
model.predict([[6,0,1,1], [9,2,1,2],[6,9,6,8],[2,3,6,6],[6,9,9,1], [1,3,2,2],[6,0,6,8
```

```
C:\Users\Faiza\AppData\Local\Programs\Python\Python310\lib\site-packages\sklearn\bas
e.py:450: UserWarning: X does not have valid feature names, but DecisionTreeClassifie
r was fitted with feature names
  warnings.warn(
```

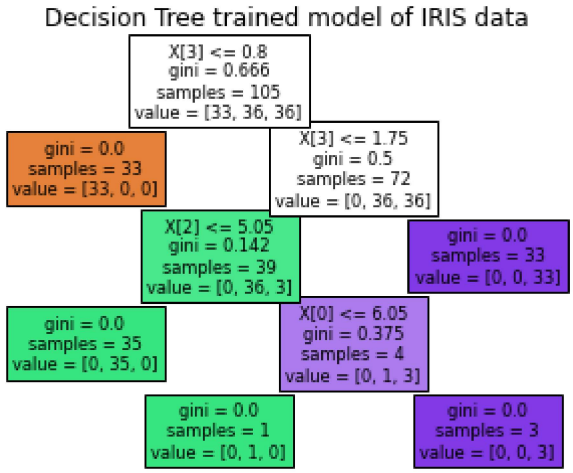
Out[ ]:
```
array(['setosa', 'setosa', 'virginica', 'virginica', 'virginica',
       'setosa', 'virginica', 'virginica'], dtype=object)
```

In [ ]:
```
score=model.score(X_test, y_test)
print("The Accuracy of model is =", score)
```

```
The Accuracy of model is = 0.9333333333333333
```

In [ ]:
```
#from sklearn.tree import DecisionTreeClassifier
plot_tree(model, filled=True)
plt.title("Decision Tree trained model of IRIS data")
plt.savefig('tiff_compressed.tiff', dpi=600, formats="tiff",
            facecolor='white', edgecolor='none',
            pil_kwargs={"compression": "tiff_lzw"})
plt.show()
```

```
C:\Users\Faiza\AppData\Local\Temp/ipykernel_8420/3955447858.py:4: MatplotlibDeprecati
onWarning: savefig() got unexpected keyword argument "formats" which is no longer sup
ported as of 3.3 and will become an error in 3.6
  plt.savefig('tiff_compressed.tiff', dpi=600, formats="tiff",
```



In [ ]: