```
from sklearn.tree import DecisionTreeClassifier

In [2]:
    df = pd.read_csv(r"C:\Users\hp\Documents\Datasets\IRIS.csv")
    df.head()
```

Out[2]:		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 [3]: ## Checking any missing values
    df.isnull().sum()
```

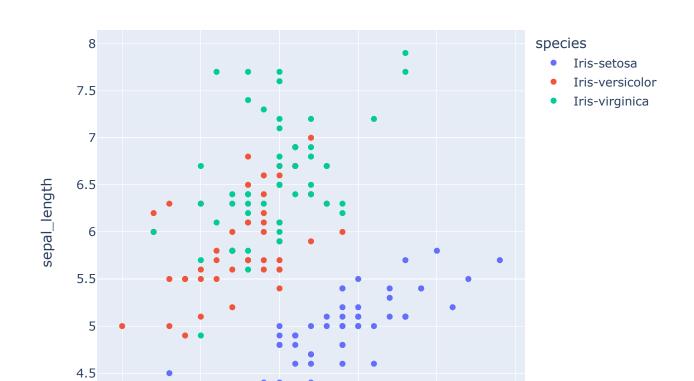
```
Out[3]: sepal_length 0 sepal_width 0 petal_length 0 petal_width 0 species 0 dtype: int64
```

In [1]:

## Visualisation part

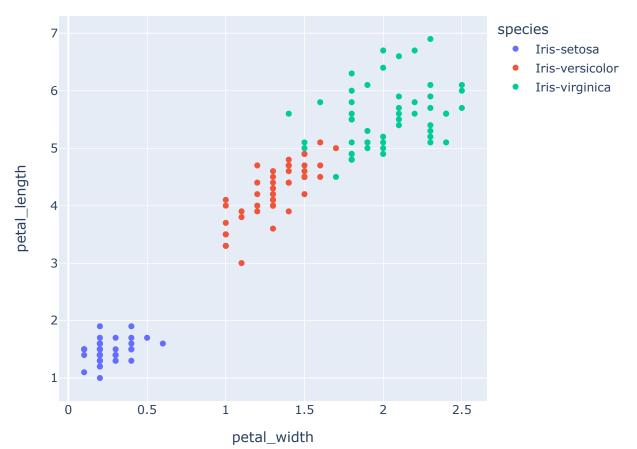
import pandas as pd

```
import plotly.express as px
fig = px.scatter(df, x="sepal_width", y="sepal_length", color="species")
fig.show()
```



```
2 2.5 3 3.5 4 4.5 sepal_width
```

```
import plotly.express as px
fig = px.scatter(df, x="petal_width", y="petal_length", color="species")
fig.show()
```



```
In [6]: ## Splitting Data
    X = df.drop(["species"], axis=1)
    Y = df["species"]

In [7]: from sklearn.model_selection import train_test_split

In [8]:    X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.2, random_state=1)

In [9]:    clf = DecisionTreeClassifier()

In [10]:    model = clf.fit(X_train, Y_train)
```

```
In [13]:
           Y pred = model.predict(X test)
           Y pred
          array(['Iris-setosa', 'Iris-versicolor', 'Iris-versicolor', 'Iris-setosa',
Out[13]:
                   'Iris-virginica', 'Iris-versicolor', 'Iris-virginica',
                   'Iris-setosa', 'Iris-setosa', 'Iris-virginica', 'Iris-versicolor',
                   'Iris-setosa', 'Iris-virginica', 'Iris-versicolor',
                  'Iris-versicolor', 'Iris-setosa', 'Iris-versicolor',
                  'Iris-versicolor', 'Iris-setosa', 'Iris-setosa', 'Iris-versicolor',
                  'Iris-versicolor', 'Iris-virginica', 'Iris-setosa',
                  'Iris-virginica', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
                  'Iris-versicolor', 'Iris-virginica'], dtype=object)
In [12]:
           model.score(X test,Y test)
          0.9666666666666667
Out[12]:
In [14]:
           import matplotlib.pyplot as plt
           from sklearn import tree
In [15]:
           fig = plt.figure(figsize=(25,20))
           = tree.plot tree(clf,
                                 feature names=X.columns,
                                 class names=Y.unique(),
                                 filled=True)
                                           petal width \leq 0.8
                                               qini = 0.665
                                             samples = 120
                                           value = [39, 37, 44]
                                           class = Iris-virginica
                                                      petal width \leq 1.65
                                     gini = 0.0
                                                         gini = 0.496
                                   samples = 39
                                                         samples = 81
                                  value = [39, 0, 0]
                                                      value = [0, 37, 44]
                                 class = Iris-setosa
                                                      class = Iris-virginica
                     petal length <= 4.95
                                                                                     petal length <= 4.85
                          qini = 0.18
                                                                                          qini = 0.048
                         samples = 40
                                                                                         samples = 41
                       value = [0, 36, 4]
                                                                                       value = [0, 1, 40]
                     class = Iris-versicolor
                                                                                      class = Iris-virginica
                                petal width <= 1.55
                                                                            sepal width \leq 3.1
                gini = 0.0
                                                                                                      gini = 0.0
                                     gini = 0.32
                                                                               gini = 0.375
              samples = 35
                                                                                                    samples = 37
                                    samples = 5
                                                                               samples = 4
            value = [0, 35, 0]
                                                                                                  value = [0, 0, 37]
                                                                             value = [0, 1, 3]
                                  value = [0, 1, 4]
           class = Iris-versicolor
                                                                                                 class = Iris-virginica
                                 class = Iris-virginica
                                                                           class = Iris-virginica
                                           petal length \leq 5.45
                           gini = 0.0
                                                                     gini = 0.0
                                                                                           gini = 0.0
                                                gini = 0.5
                         samples = 3
                                                                    samples = 3
                                                                                          samples = 1
                                               samples = 2
                        value = [0, 0, 3]
                                                                  value = [0, 0, 3]
                                                                                        value = [0, 1, 0]
                                             value = [0, 1, 1]
                      class = Iris-virginica
                                                                class = Iris-virginica
                                                                                     class = Iris-versicolor
                                           class = Iris-versicolor
                                     gini = 0.0
                                                           gini = 0.0
                                    samples = 1
                                                         samples = 1
                                  value = [0, 1, 0]
                                                        value = [0, 0, 1]
                                class = Iris-versicolor
                                                      class = Iris-virginica
```

In [ ]:			