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Importing libraries in Python
import sklearn.datasets as datasets

In []:

- Create the Decision Tree classifier and visualize it graphically.
- The purpose is if we feed any new data to this classifier, it would be able to predict the right class accordingly.

```
import pandas as pd
        # Loading the iris dataset
        iris=datasets.load_iris()
        # Forming the iris dataframe
        df=pd.DataFrame(iris.data, columns=iris.feature_names)
        print(df.head(5))
        y=iris.target
        print(y)
          sepal length (cm) sepal width (cm) petal length (cm) petal width (cm)
                                     3.5
                      5.1
                                                     1.4
                      4.9
                                     3.0
                                                     1.4
                      4.7
                                     3.2
                                                     1.3
                                                                     0.2
                      4.6
                                     3.1
                                                     1.5
                                     3.6
       2 2]
      Now let us define the Decision Tree Algorithm
        # Defining the decision tree algorithm
        from sklearn.tree import DecisionTreeClassifier
        dtree=DecisionTreeClassifier()
        dtree.fit(df,y)
        print('Decision Tree Classifer Created')
       Decision Tree Classifer Created
      Let us visualize the Decision Tree to understand it better.
In [ ]:
        # Install required libraries
        !pip install pydotplus
        !apt-get install graphviz -y
        # Import necessary libraries for graph viz
        from sklearn.externals.six import StringIO
        from IPython.display import Image
        from sklearn.tree import export_graphviz
        import pydotplus
        # Visualize the graph
        dot_data = StringIO()
        export_graphviz(dtree, out_file=dot_data, feature_names=iris.feature_names,
                     filled=True, rounded=True,
                     special_characters=True)
        graph = pydotplus.graph_from_dot_data(dot_data.getvalue())
        Image(graph.create_png())
Out[]:
                                                                 petal width (cm) \leq 0.8
                                                                     gini = 0.667
                                                                    samples = 150
                                                                 value = [50, 50, 50]
                                                                                False
                                                               True
                                                                            petal width (cm) ≤ 1.75
                                                          gini = 0.0
                                                                                  gini = 0.5
                                                        samples = 50
                                                                               samples = 100
                                                       value = [50, 0, 0]
                                                                              value = [0, 50, 50]
                                                          petal length (cm) ≤ 4.95
                                                                                             petal length (cm) \leq 4.85
                                                                gini = 0.168
                                                                                                  gini = 0.043
                                                                                                 samples = 46
                                                               samples = 54
                                                              value = [0, 49, 5]
                                                                                                value = [0, 1, 45]
                                                                                             sepal width (cm) ≤ 3.1
                                                           petal width (cm) \leq 1.55
                          petal width (cm) \leq 1.65
                                                                                                                           gini = 0.0
                                                                gini = 0.444
                                                                                                  gini = 0.444
                               gini = 0.041
                                                                                                                        samples = 43
                              samples = 48
                                                                samples = 6
                                                                                                  samples = 3
                                                                                                                       value = [0, 0, 43]
                                                                                                value = [0, 1, 2]
                            value = [0, 47, 1]
                                                              value = [0, 2, 4]
                                                                    sepal length (cm) ≤ 6.95
                                                    gini = 0.0
                                                                                                   gini = 0.0
            gini = 0.0
                                gini = 0.0
                                                                                                                       gini = 0.0
                                                                          gini = 0.444
          samples = 47
                              samples = 1
                                                  samples = 3
                                                                                                  samples = 2
                                                                                                                     samples = 1
                                                                          samples = 3
        value = [0, 47, 0]
                             value = [0, 0, 1]
                                                 value = [0, 0, 3]
                                                                                                 value = [0, 0, 2]
                                                                                                                    value = [0, 1, 0]
                                                                        value = [0, 2, 1]
                                                                 gini = 0.0
                                                                                     gini = 0.0
                                                                samples = 2
                                                                                    samples = 1
                                                               value = [0, 2, 0]
                                                                                  value = [0, 0, 1]
```