```
In [1]: |
        import pandas as pd
        from sklearn.preprocessing import LabelEncoder
        from sklearn.tree import DecisionTreeClassifier, export_text
        from sklearn import tree
        import matplotlib.pyplot as plt
        data = pd.DataFrame([
In [2]:
            ['Sunny', 'Hot', 'High', 'Weak', 'No'],
            ['Sunny', 'Hot', 'High', 'Strong', 'No'],
            ['Overcast', 'Hot', 'High', 'Weak', 'Yes'],
            ['Rain', 'Mild', 'High', 'Weak', 'Yes'],
            ['Rain', 'Cool', 'Normal', 'Weak', 'Yes'],
            ['Rain', 'Cool', 'Normal', 'Strong', 'No'],
            ['Overcast', 'Cool', 'Normal', 'Strong', 'Yes'],
            ['Sunny', 'Mild', 'High', 'Weak', 'No'],
            ['Sunny', 'Cool', 'Normal', 'Weak', 'Yes'],
            ['Rain', 'Mild', 'Normal', 'Weak', 'Yes'],
            ['Sunny', 'Mild', 'Normal', 'Strong', 'Yes'],
            ['Overcast', 'Mild', 'High', 'Strong', 'Yes'],
            ['Overcast', 'Hot', 'Normal', 'Weak', 'Yes'],
            ['Rain', 'Mild', 'High', 'Strong', 'No']
        ], columns=['Outlook', 'Temperature', 'Humidity', 'Wind', 'PlayTennis'])
       le = LabelEncoder()
In [3]:
        for column in data.columns:
            data[column] = le.fit_transform(data[column])
In [4]: | X = data.drop('PlayTennis', axis=1)
        y = data['PlayTennis']
        model = DecisionTreeClassifier(criterion='gini', max_depth=3)
In [5]:
        model.fit(X, y)
Out[5]: ▼
                DecisionTreeClassifier
        DecisionTreeClassifier(max depth=3)
In [6]:
        plt.figure(figsize=(12, 8))
        tree.plot_tree(model, feature_names=X.columns.tolist(), class_names=['No', 'Yes'], fille
        plt.title("CART Decision Tree (Gini Index)")
        plt.show()
                                       CART Decision Tree (Gini Index)
                                Outlook \leq 0.5
                                  gini = 0.459
                                 samples = 14
                                 value = [5, 9]
                                  class = Yes
                                          Humidity \leq 0.5
                        gini = 0.0
                                              gini = 0.5
                       samples = 4
                                            samples = 10
                      value = [0, 4]
                                            value = [5, 5]
                        class = Yes
                                             class = No
                     Outlook <= 1.5
                                                                  Wind \leq 0.5
                        gini = 0.32
                                                                   gini = 0.32
                       samples = 5
                                                                  samples = 5
                                                                 value = [1, 4]
                      value = [4, 1]
                        class = No
                                                                   class = Yes
                                                         gini = 0.5
                                                                              gini = 0.0
              gini = 0.5
                                   gini = 0.0
                                                       samples = 2
                                  samples = 3
                                                                             samples = 3
            samples = 2
            value = [1, 1]
                                 value = [3, 0]
                                                                            value = [0, 3]
                                                       value = [1, 1]
             class = No
                                   class = No
                                                        class = No
                                                                             class = Yes
```