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In [ ]: import pandas as pd
        from sklearn.tree import DecisionTreeClassifier, plot_tree
        from sklearn.model_selection import train_test_split
        from sklearn.metrics import accuracy_score
        data = pd.read_csv("drug200.csv")
        df = pd.DataFrame(data)
        df['Sex'] = df['Sex'].map({'F': 0, 'M': 1})
df['BP'] = df['BP'].map({'LOW': 0, 'NORMAL': 1, 'HIGH': 2})
In [ ]:
        df['Cholesterol'] = df['Cholesterol'].map({'NORMAL': 0, 'HIGH': 1})
In [ ]: X = df.drop(columns=['Drug'])
        y = df['Drug']
        X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
        clf = DecisionTreeClassifier()
        clf.fit(X_train, y_train)
Out[]:
        ▼ DecisionTreeClassifier
       DecisionTreeClassifier()
        y_pred = clf.predict(X_test)
        accuracy = accuracy_score(y_test, y_pred)
        print("Accuracy:", accuracy)
        Accuracy: 1.0
In [ ]: import matplotlib.pyplot as plt
        plt.figure(figsize=(20,10))
        plot_tree(clf, feature_names=X.columns, class_names=clf.classes_, filled=True, rounded=True)
        plt.show()
                                                                                                Na_to_K <= 14.829
                                                                                                    gini = 0.68
                                                                                                  samples = 160
                                                                                           value = [17, 13, 11, 43, 76]
                                                                                                   class = drugY
                                                                                    BP <= 1.5
                                                                                                                     gini = 0.0
                                                                                   gini = 0.656
                                                                                                                   samples = 76
                                                                                  samples = 84
                                                                                                              value = [0, 0, 0, 0, 76]
                                                                           value = [17, 13, 11, 43, 0]
                                                                                                                   class = drugY
                                                                                  class = drugX
                                                   BP <= 0.5
                                                                                                                    Age <= 50.5
                                                                                                                    gini = 0.491
                                                  gini = 0.324
                                                 samples = 54
                                                                                                                   samples = 30
                                                                                                              value = [17, 13, 0, 0, 0]
                                            value = [0, 0, 11, 43, 0]
                                                 class = drugX
                                                                                                                   class = drugA
                              Cholesterol \leq 0.5
                                                                    gini = 0.0
                                                                                                     gini = 0.0
                                                                                                                                      gini = 0.0
                                  gini = 0.499
                                                                                                                                    samples = 13
                                                                  samples = 31
                                                                                                   samples = 17
                                 samples = 23
                                                                                                                               value = [0, 13, 0, 0, 0]
                                                             value = [0, 0, 0, 31, 0]
                                                                                              value = [17, 0, 0, 0, 0]
                           value = [0, 0, 11, 12, 0]
                                                                  class = drugX
                                                                                                   class = drugA
                                                                                                                                    class = drugB
                                 class = drugX
                               V
                                                    gini = 0.0
                   gini = 0.0
                samples = 12
                                                 samples = 11
            value = [0, 0, 0, 12, 0]
                                            value = [0, 0, 11, 0, 0]
                class = drugX
                                                 class = drugC
```