

```
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
import sklearn.tree as tree
import matplotlib.pyplot as plt
df = pd.read_csv('content/drug200.csv')
df.head()
X = df[['Age', 'Gender', 'BP', 'Cholestrol', 'Na-to-K']]
X[0:5]
X = pd.get_dummies(X)
X.head()
Y = df['Drug']
Y[0:5]
from sklearn.model_selection import train_test_split
X_trainset, X_testset, Y_trainset, Y_testset = train_test_split(
    X, Y, test_size=0.3, random_state=3)
drugTree = DecisionTreeClassifier(criterion="entropy",
    max_depth=4)
drugTree
drugTree.fit(X_trainset, Y_trainset)
predTree = drugTree.predict(X_testset)
print(predTree[0:5])
print(Y_testset[0:5])
from sklearn import metrics
print("DecisionTree's Accuracy: ", metrics.accuracy(
    Y_testset, predTree))
tree.plot_tree(drugTree)
plt.show()
```

Experiment-3 [Decision Tree Algorithm]

Aim: The aim of this experiment is to create and test a classification model using the Decision Tree Algorithm to find a proper drug for a new patient.

Dataset:

The dataset used for this experiment is 'drug200.csv'.

Objective:

1. Utilise the Decision tree Algorithm for classification.
2. Evaluate the accuracy of the model.

Procedure:

one hot encoding

1. Import Necessary Libraries

Import the required libraries for data manipulation, model implementation & visualisation.

2. Get Data

Load the dataset 'drug200.csv' into a pandas Dataframe.

3. Pre-processing Data

Extract feature matrix (X) and response vector (Y) from the dataset.

4. Handle Categorical Variables

Convert categorical variables into dummy variables to make them suitable for model training.

5. Train-Test Split

Split the dataset into training & testing sets to train the model on a subset of data and evaluate its performance on unseen data.

6. Model Training

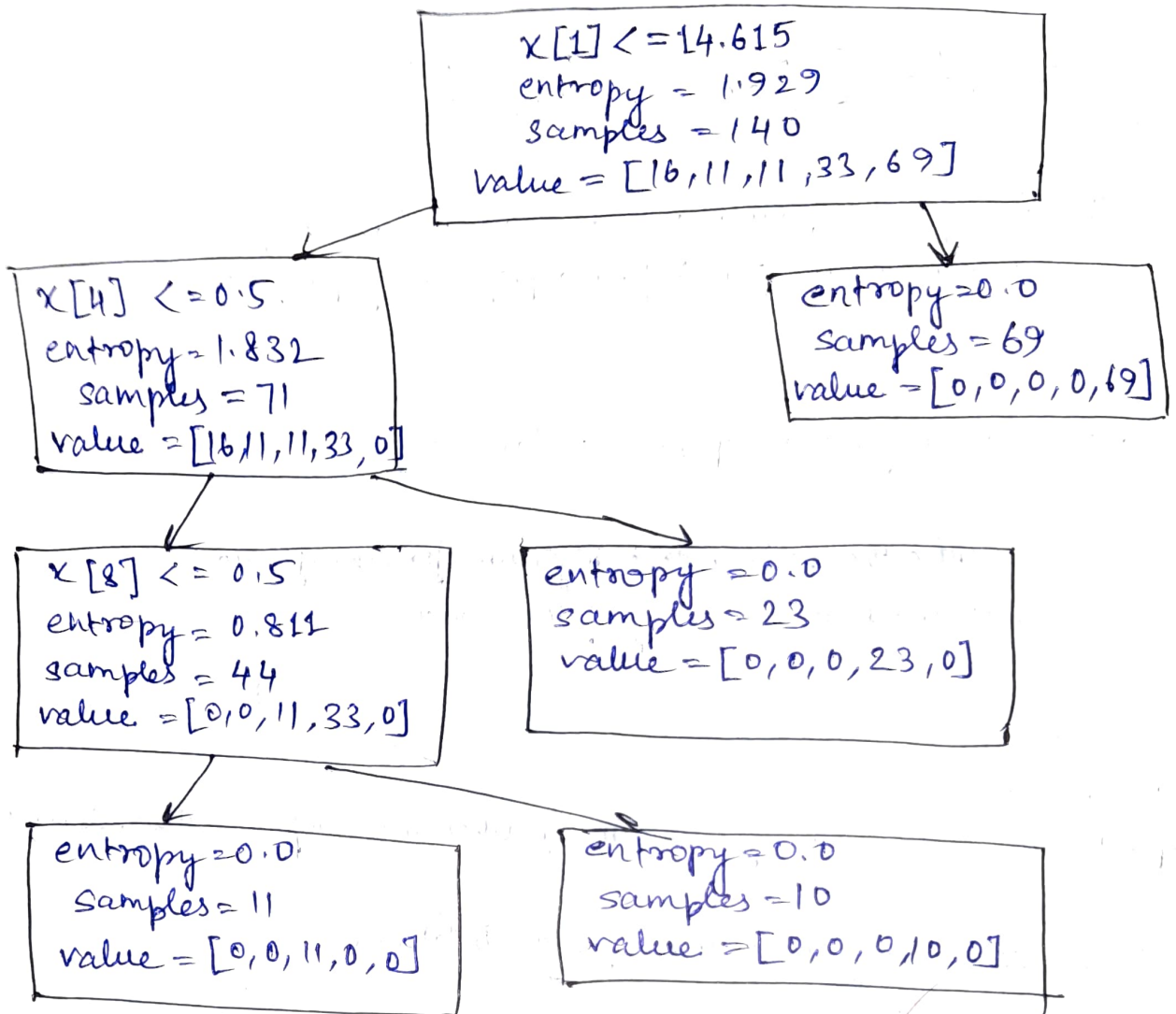
Train the decision tree classifier using the training data.

7. Predictions on Test set

Use the trained model to make predictions on the test set.



Teacher's Signature : _____



Decision Tree

Evaluation

Evaluate the accuracy of the model by comparing predicted values with actual values from the test set.

Visualisation

Visualize the decision tree model to understand its structure and decision-making process.

Observations

Provide observations or insights gathered from the model's performance metrics and visualisations.

Conclusion :

DecisionTree's Accuracy : 0.983333333333

