

## **Artificial Intelligence**

Lab Tasks # 13

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## Task # 01

```
import pandas as pd
from sklearn import tree
import matplotlib.pyplot as plt

# Step 1: Load dataset from CSV file
data = pd.read_csv("C:/Users/Lenovo/Downloads/study_dataset.csv") # Update path if needed

# Step 2: Separate features and labels

X = data.drop( labels: "Pass", axis=1)

Y = data["Pass"]

# Step 3: Create and train the model
clf = tree.DecisionTreeClassifier()
clf = clf.fit(X, Y)

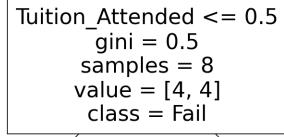
# Step 4: Predict for a new student
sample = pd.DataFrame( data: [[3, 7, 1]], columns=["Hours_Studied", "Sleep_Hours", "Tuition_Attended"])
prediction = clf.predict(sample)

print("Will the student pass? (1 = Yes, 0 = No):", prediction[0])

# Step 5: Visualize the tree
plt.figure(figsize=(12, 8))
```

## Output

```
Will the student pass? (1 = Yes, 0 = No): 1
```



True False

gini = 0.0 samples = 4 value = [4, 0] class = Fail

gini = 0.0 samples = 4 value = [0, 4] class = Pass