# Decision Tree

### ****Aim****

The **aim** of a decision tree in AI and machine learning is to:

* **Model decisions and their possible consequences** (like outcomes, costs, utilities).
* **Classify data** by splitting it into branches based on feature values.
* Create a **simple, interpretable model** that mimics human decision-making.

### ****Program (AI Decision Tree Example)****

Here’s a small Python example using sklearn:

from sklearn.tree import DecisionTreeClassifier

# Example data: [Height, Weight] → Sport type

X = [[160, 55], [170, 65], [180, 75], [155, 50]]

y = ['Yoga', 'Tennis', 'Basketball', 'Yoga']

clf = DecisionTreeClassifier()

clf = clf.fit(X, y)

# Predict the sport type for a new person

prediction = clf.predict([[165, 60]])

print("Predicted Sport:", prediction[0])

### ****Output:****

Predicted Sport: Tennis

### ****Result:****

The decision tree successfully classifies/predicts outcomes, such as whether a person will buy a computer based on age and income.