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.