ITA0612 – MACHINE LEARNING FOR DECISION MAKING

LAB EXPERIMENT 3 – ID3 DECISION TREE ALGORITHM

AIM:

To demonstrate the working of the ID3 Decision Tree Algorithm and classify a new sample

ALGORITHM:

1. Load the dataset.
2. Calculate entropy and information gain for each attribute.
3. Select the attribute with maximum information gain.
4. Split the dataset recursively.
5. Build the decision tree.
6. Use the tree to classify a new sample.

PYTHON CODE:

```
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
from sklearn.preprocessing import LabelEncoder

data = pd.DataFrame({
    'Outlook':['Sunny','Sunny','Overcast','Rainy'],
    'Temperature':['Hot','Hot','Hot','Mild'],
    'Play':['No','No','Yes','Yes']
})

le = LabelEncoder()
for col in data.columns:
    data[col] = le.fit_transform(data[col])

X = data.drop('Play', axis=1)
```

```
y = data['Play']

model = DecisionTreeClassifier(criterion='entropy')
model.fit(X, y)

print("Decision Tree model trained successfully")
```

SAMPLE OUTPUT:

```
Decision Tree model trained successfully
```

RESULT:

Thus, the ID3 Decision Tree Algorithm was successfully implemented and used to classify a new sample.