**Name: Harsh Patel**

**Roll NO: A42**

**Experiment No:4**

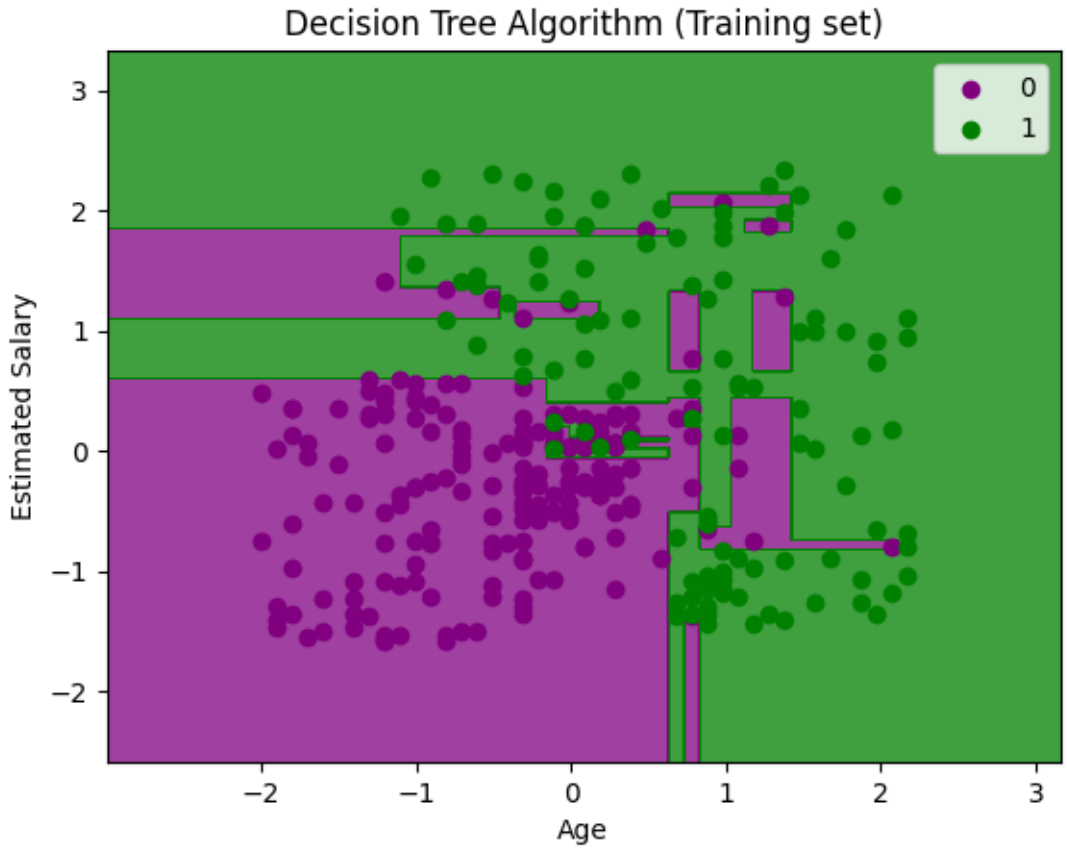
Aim: Write a python program to evaluate a Decision tree on iris Dataset

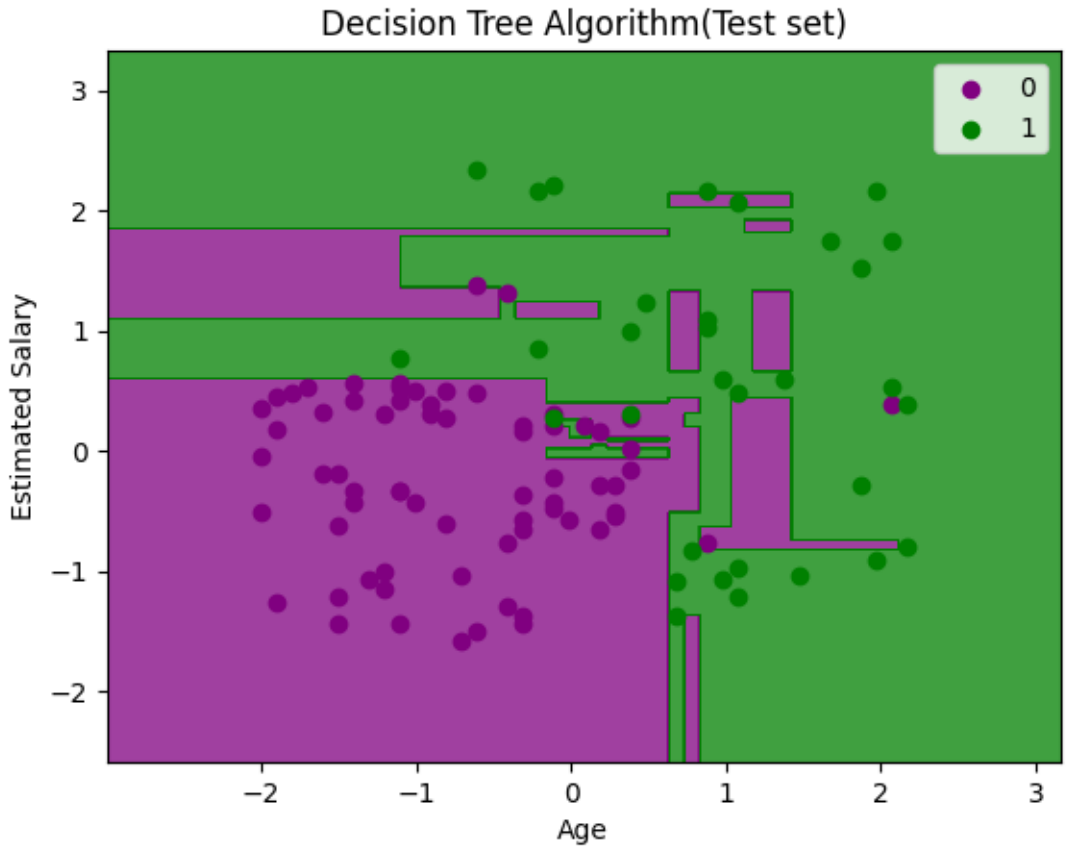
## Code :

```
# importing libraries
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd

# importing dataset
data_set = pd.read_csv('/content/User_Data.csv')

# Extracting Independent and dependent Variable
x = data_set.iloc[:, [2, 3]].values
y = data_set.iloc[:, 4].values

# Splitting the dataset into training and test set.
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y,
test_size=0.25, random_state=0)

# Feature Scaling
from sklearn.preprocessing import StandardScaler
sc_x = StandardScaler()
x_train = sc_x.fit_transform(x_train)
x_test = sc_x.transform(x_test)

# Fitting Decision Tree classifier to the training set
from sklearn.tree import DecisionTreeClassifier
classifier = DecisionTreeClassifier(criterion='entropy',
random_state=0)
classifier.fit(x_train, y_train)

# Predicting the test set result
y_pred = classifier.predict(x_test)

# Creating the Confusion matrix
from sklearn.metrics import confusion_matrix
cm = confusion_matrix(y_test, y_pred)

# Visualizing the training set result
from matplotlib.colors import ListedColormap
```

```
x_set, y_set = x_train, y_train
x1, x2 = np.meshgrid(np.arange(start=x_set[:, 0].min() - 1,
stop=x_set[:, 0].max() + 1, step=0.01),
                     np.arange(start=x_set[:, 1].min() - 1,
stop=x_set[:, 1].max() + 1, step=0.01))
plt.contourf(x1, x2, classifier.predict(np.array([x1.ravel(),
x2.ravel()]).T).reshape(x1.shape),
             alpha=0.75, cmap=ListedColormap(('purple', 'green')))
plt.xlim(x1.min(), x1.max())
plt.ylim(x2.min(), x2.max())
for i, j in enumerate(np.unique(y_set)):
    plt.scatter(x_set[y_set == j, 0], x_set[y_set == j, 1],
                c=ListedColormap(('purple', 'green'))(i), label=j)
plt.title('Decision Tree Algorithm (Training set)')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()

# Visualizing the test set result
x_set, y_set = x_test, y_test
x1, x2 = np.meshgrid(np.arange(start=x_set[:, 0].min() - 1,
stop=x_set[:, 0].max() + 1, step=0.01),
                     np.arange(start=x_set[:, 1].min() - 1,
stop=x_set[:, 1].max() + 1, step=0.01))
plt.contourf(x1, x2, classifier.predict(np.array([x1.ravel(),
x2.ravel()]).T).reshape(x1.shape),
             alpha=0.75, cmap=ListedColormap(('purple', 'green')))
plt.xlim(x1.min(), x1.max())
plt.ylim(x2.min(), x2.max())
for i, j in enumerate(np.unique(y_set)):
    plt.scatter(x_set[y_set == j, 0], x_set[y_set == j, 1],
                c=ListedColormap(('purple', 'green'))(i), label=j)
plt.title('Decision Tree Algorithm(Test set)')
plt.xlabel('Age')
plt.ylabel('Estimated Salary')
plt.legend()
plt.show()
```

**OUTPUT:-**


Decision Tree Algorithm (Training set)
0
1
Estimated Salary
Age
3
2
1
0
−1
−2
−2
−1
0
1
2
3


Decision Tree Algorithm(Test set)
0
1
Estimated Salary
Age
3
2
1
0
−1
−2
−2
−1
0
1
2
3