Experiment - 9

Decision Tree Classification

AIM

To classify the Social Network dataset using Decision tree analysis.

PROGRAM

```
from google.colab import drive
drive.mount("/content/gdrive")

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
dataset = pd.read_csv('/content/gdrive/My
                  Drive/Social_Network_Ads.csv')

x = dataset.iloc[:, [2,3]].values
y = dataset.iloc[:, -1].values
from sklearn.model_selection import
                              train_test_split
x_train, x_test, y_train, y_test = ~~test~~
        train_test_split(x, y, test_size = 0.25,
                         random_state = 0)

from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
x_train = sc.fit_transform(x_train)
x_test = sc.transform(x_test)
```

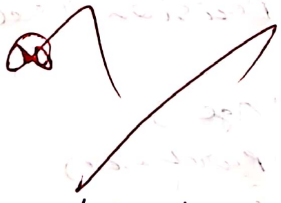
```
from sklearn.tree import DecisionTreeClassifier
classifier = DecisionTreeClassifier(criterion =
                'entropy', random_state=0)
classifier.fit(x_train, y_train)
y_pred = classifier.predict(x_test)

from sklearn.metrics import confusion_matrix,
cm = confusion_matrix(y_test, y_pred)
print(cm)
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.contour(x1,x2, classifier.predict(np.
    array([x1.ravel(), x2.ravel()]).T).
    reshape(x1.shape), alpha =0.75, cmap =
    ListedColormap(('red','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
        (('red','green'))(i), label =j)
    plt.title('Decision Tree Classification
                (Training set)')
    plt.xlabel('Age')
    plt.ylabel('Purchase')
    plt.legend()
plt.show()
```

OUTPUT



RESULT

Thus, the program for decision tree classification is successfully executed and the output is verified.