EX NO : 9

DATE:

DECISION TREE CLASSIFICATION

AIM :

To classify the Social Network dataset using Decision tree analysis.

PROGRAM :

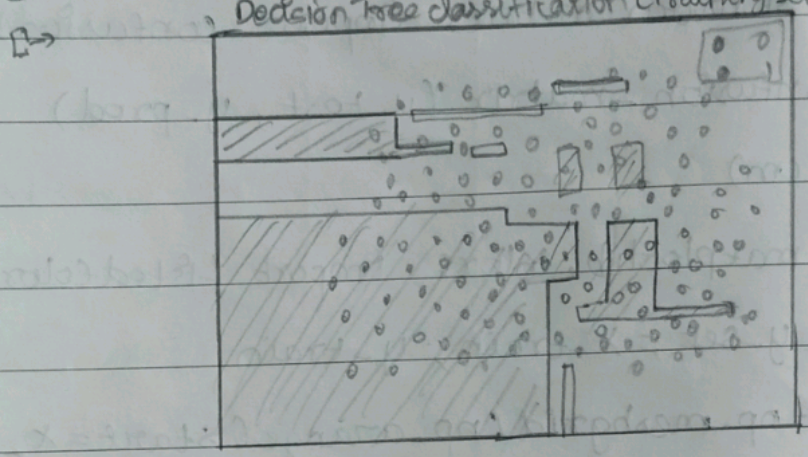
```
from google.colab import drive
drive.mount("/content/gdrive")
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
dataset = pd.read_csv('/content/gdrive/My
        Drive/Social_Network_Ads.csv')
X = dataset.iloc[:, [2,3]].values
y = dataset.iloc[:, -1].values
from sklearn.model_selection import train_test_s
X_train, X_test, y_train, y_test = train_test_split
        (X, y, test_size=0.25, random_state=0)
from sklearn.preprocessing import StandardScale
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

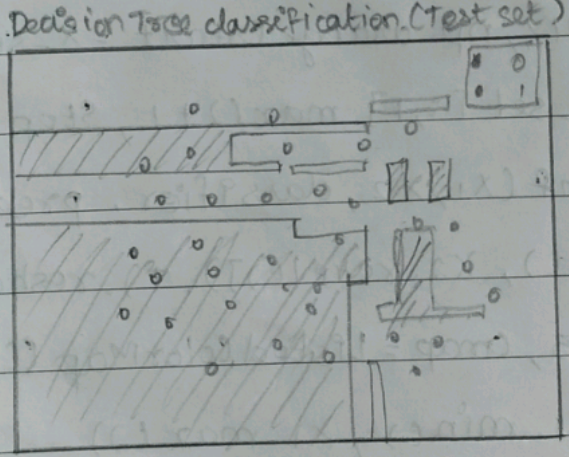
```
from sklearn.tree import DecisionTreeClasifier
classifier = DecisionTreeClassifier(criterion='entropy'
                                    random_state = 0)
classifier.fit(X_train, y_train)
y_pred = classifier.predict(X_test)
from sklearn.metrics import confusion_matrix
cm = confusion_matrix(y_test, 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.contourf(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 :

```
[[62  6]
 [3  29]]
```





RESULT :

To implement decision tree classification, the program is executed and the output is verified.