Assignment No.2 Decision Tree Classifier

Code in Python

```
# Load Libraries
import pandas as pd
import numpy as np

# Load Dataset
dataset = pd.read_csv("dataset_Ass_2.csv")
X = dataset.iloc[:, :-1]
y = dataset.iloc[:, 5]

# show the dataset table
print("----------------->Table of dataset<--------------------
\n", dataset)
print("-----------------------------------------------------
")

print(dataset.describe())
print("-----------------------------------------------------
")

# Perform Label encoding
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
X = X.apply(le.fit_transform)
print(X)
print("-----------------------------------------------------
")

from sklearn.tree import DecisionTreeClassifier
regressor = DecisionTreeClassifier()
regressor.fit(X.iloc[:, 1:5], y)

# Predict value for the given Expression
X_in = np.array([1, 1, 0, 0])
y_pred = regressor.predict([X_in])
print("Prediction:", y_pred)


from sklearn.externals.six import StringIO
from IPython.display import Image
from sklearn.tree import export_graphviz
import pydotplus

dot_data = StringIO()

export_graphviz(regressor, out_file=dot_data, filled=True,
rounded=True, special_characters=True)
graph = pydotplus.graph_from_dot_data(dot_data.getvalue())
graph.write_png('tree.png')
```

Output

```
----------->Table of dataset<----------
    ID     Age  Income  Gender Marital Status Buys
0   1    < 21    High    Male       Single   No
1   2    < 21    High    Male      Married   No
2   3  21 - 35   High    Male       Single  Yes
3   4    > 35  Medium    Male       Single  Yes
4   5    > 35     Low  Female       Single  Yes
5   6    > 35     Low  Female      Married   No
6   7  21 - 35    Low  Female      Married  Yes
7   8    < 21  Medium    Male       Single   No
8   9    < 21     Low  Female      Married  Yes
9  10    > 35  Medium  Female       Single  Yes
10 11    < 21  Medium  Female      Married  Yes
11 12  21 - 35  Medium    Male      Married  Yes
12 13  21 - 35    High  Female      Single  Yes
13 14    > 35  Medium    Male      Married   No
-----------------------------------------------------
          ID
count  14.0000
mean    7.5000
std     4.1833
min     1.0000
25%     4.2500
50%     7.5000
75%    10.7500
max    14.0000
-----------------------------------------------------
   ID  Age  Income  Gender  Marital Status
0   0   1      0       1               1
1   1   1      0       1               0
2   2   0      0       1               1
3   3   2      2       1               1
4   4   2      1       0               1
5   5   2      1       0               0
6   6   0      1       0               0
7   7   1      2       1               1
8   8   1      1       0               0
9   9   2      2       0               1
```

```
10  10   1    2    0          0
11  11   0    2    1          0
12  12   0    0    0          1
13  13   2    2    1          0
-----------------------------------------------------
Prediction: ['Yes']
```